THE

AMERICAN GAS-LIGHT JOURNAL

DEVOTED TO

LIGHT, WATER-SUPPLY, AND SEWERAGE.

Iron Buildings, Nos. 254 & 256 Canal Street, East, near Broadway, New York.

SECOND YEAR—VOL. II.—No. 13. NEW-YORK, MONDAY, JULY 2, 1860. $3 PER ANNUM.

TO GAS-FITTERS & PLUMBERS.—L. Waefeler & Co., No. 94 Beekman street, New York, have always on hand several hundred kegs WROUGHT-IRON GAS-PIPE HOOKS, of all sizes from ¼ to 2 inches. They are made of best quality horse-shoe nail iron, and warranted not to break. Also, PLUMBERS' MATERIALS, such as China Wash-Basins, Closet-Basins, Pan-Closets, Bath Tubs, Boilers, Brass and Silve-plated Cocks, Brass and Iron Pumps, Hydraulic Rams, French Fountain Jets, &c., all at the very lowest prices.

BUTTS & KENDALL, (Formerly F. Butts & Co.,) Dealers in STERLING COAL, Cleveland, Ohio.—The attention of Gas Companies is called to the following letters as to the merits of the above Coal, being a few of the many we have received, and from which we are led to believe that there is no English or American Coal which combines all the qualities desired in a Gas Coal as perfectly as the Sterling :—

Office of the Manhattan Gas Light Co., New York, January 13, 1860.

MESSRS. BUTTS & KENDALL :—*Gentlemen* :—Yours of 9th inst. is received. The "Sterling Coal" received from you during the past year worked very satisfactorily—averaging 9520 cubic feet of 15 candle Gas per ton of 2240 lbs, and 41 bushels of Coke, weighing 1465 lbs. We consider it among the best of American Gas Coals, for the quantity and quality of the Gas produced, and also for the excellent quality of its Coke. I am, Gentlemen, your obedient servant, CHARLES ROOME, Pres.

Office of the Rondout and Kingston Gas Light Co., Rondout, *Jan* 4, 1860.

MESSRS BUTTS & KENDALL :—*Gentlemen* :—The 600 tons of Sterling Coal ordered from you in August, 1859, has now been in use over four months, to my entire satisfaction. Its average yield is 4, 40-100 feet, and a good strong light. The Coke produced equal in quality and quantity, to best English Coking Coals. It burns very freely with little clinker. In purification it is economical, using no more lime than New Pelton. It is superior to any American Coal I ever used. I shall be pleased to give you any further information at my office in New York.

WM. W. HAGUE, 522 Broadway.

The Cleveland Gas Light and Coke Co., *Office*, 195 *Superior-St., Cleveland, Dec.* 30, 1859.

MESSRS. BUTTS & KENDALL :—*Gentlemen* :—This Company has used between 3000 and 4000 tons of your "Sterling Coal," and are still using it with very satisfactory results. We find the average product of a ton of 2000 lbs. is about 8800 feet of Gas and about 37 bushels of Coke. The Gas is of good illuminating power and quite free from sulphur or other impurities, one bushel of lime purifying 9000 feet, and the Coke of very superior quality. The yield of Gas is about the same as from the Pittsburgh Coal, and the Coke better adapted to our use. Yours, truly, T DWIGHT ELLS, Sec.

Office of the Sandusky, O., Gas Co., *Jan.* 16, 1860

MESSRS. BUTTS & KENDALL:—*Gentlemen* :—This Company has used your Sterling Coal since(July 3d, 1859, and are still continuing the ue of it with satisfaction to the Company and consumers. The average product has been 8,629 feet of Gas per ton of 2,000 lbs, and 37 bushels of Coke of very superior quality. The Gas is as good as that obtained from Pittsburgh Coal I consider it the best Coal ever used in our works. I am, gentlemen, yours respectfully, WM HUDSON, Sup't & Sec'y.

We would also refer to Gas Companies in the following places :—New York City (Manhattan and New York Co's), Albany, Troy, West Troy, Rochester, Oswego, Rondout, Kingston, Albion, Brockport, Seneca Falls, Elmira and Lyons, in the State of New York ; Cleveland, Toledo, Sandusky, Norwalk and Oberlin, in Ohio ; Detroit, Ann Arbor, Grand Rapids and Kalamazoo, in Michigan ; Coburg, in Canada, and two Companies in Milwaukie, Wisconsin.

The extensive Mines of the Sterling Coal and Mining Company, in the western part of Pennsylvania (known as the Sterling Hills, and the highest in that part of the State), are wholly under our control, and the Coal is mined and sold only by us or our Agents. The average product of the Sterling Coal, per ton of 2,000 lbs., is 8,733 feet of 15¼ candle Gas (4, 37-100 per lb.), and 37 bushels of Coke of very superior quality. Getting our Coal to this place by railroad, a supply can be had during the summer months (as well as at all other times), which is not the case with coals dependent upon nigh water for transportation, as are most or all other gas coals which are sent to the Lake ports for shipment. Our mining facilities are such, that we are prepared to ship extensively. For any further information address the undersigned, or M. BALLARD, Esq., Syracuse, N. Y., who is our Agent for that State.

BUTTS & KENDALL, Cleveland, O.

CORNELIUS & BAKER,

MANUFACTURERS OF

Lamps, Chandeliers, Gas-Fixtures, &c.,

MANUFACTORIES,

821 Cherry-St., and Fifth-St. and Columbia Avenue.

STORE, 710 CHESTNUT STREET,

PHILADELPHIA.

JOHN HEARN & CO., Dealers and Miners in AMERICAN GAS-COALS, Erie, Penn., would call the attention of Gas Companies to the superior quality of our Coals. For the past ten years they have been used by a majority of the Gas Companies in the State of New York, west of Albany and Troy. And also by the Gas Companies in the cities and towns of the North-Western States, and, during the past year, by the East Troy Gas-Light Company, Albany Gas-Light Co., and Manhattan Gas-Light Co. of the city of New-York, —all of which heretofore used English Coals.

Owning our mines and a fleet of vessels on the Lakes, having no Railroad transportation, and only 70 miles of canal from this city, or 140 miles of canal and Lake from Buffalo to the coal fields, being 175 miles less of transportation for Coal to the Seaboard, than any Coal Depot on the Lakes, and having an Agency in Buffalo for the transhipment of our Coals only, it is unnecessary to say that parties purchasing of us, will get their Coal at first hand, saving, thereby, commission to managers and 175 miles of extra railroad and lake transportation.

A working average of our Beaver Coal is 9,500 feet of 16 Candle Gas, and 40 bushels Coal to the ton of 2,240 lbs.

The Manhattan Gas-Light Co of New York having thoroughly tested the Gas Coals of Pennsylvania and Ohio, the following extract from a letter to us will speak for itself:

"MANHATTAN GAS-LIGHT COMPANY, "New York, June 15th, 1859.

"Messrs. JOHN HEARN & Co., Erie, Penn. :

"GENTLEMEN,—This Company has a contract with your firm for the delivery of five thousand tons of Gas Coal, half each Beaver and Mount Carbon, at $ —— per ton of 2,240 lbs.

"The cargo which has been received is satisfactory, and as we shall need 15 or 20 thousand tons more, to be delivered through the present summer, we beg you to advise us whether you desire to increase your contract. We have applications from various parties who desire to supply the Company, but shall be satisfied to get a larger quantity of your Coals, provided you can serve us on terms equally favorable with others.

"For the Gas Co.

"HENRY YOUNG."

We are prepared to contract for the delivery of our Coals in the City of New York, or the cities and towns on the Hudson River.

GAS AND OIL-COALS, Foreign and Domestic.—Orders promptly executed at the lowest market prices. For sale by HORATIO HAGLE, Agt., 254 Canal-st., N. Y.

GAS-COAL.—PENN COAL CO.—The Penn Coal Company having completed arrangements for mining and shipping coal on an extensive scale, are now prepared to receive orders. The mines are favorably located on the line of the Pennsylvania Railroad, 26 miles east of Pittsburgh, Pa. The coal has been tested by many gas works, and the highest testimonials will be furnished. Communications addressed to Mr. A. L Massey, Philadelphia, will have immediate attention

ANTHRACITE AND BITUMINOUS Coal.—We are now prepared to contract with Dealers and Manufacturers, at wholesale only, for the choicest varities of Lehigh and Schuylkill Coals, Pure Locust Mountain direct from the miners' hands, George's Creek Coal from Hampshire Mines at Baltimore, and Midland Co.'s Mines at Alexandria, unexcelled for Blacksmiths', Locomotive and Manufacturing purposes. At Elizabethport, N. J., we always have a full supply of Lehigh, Spring Mountain, Hazleton and Council Ridge Coals.

LEWIS AUBENRIED & CO., 110 Broadway, 86 State street, Boston, 205 Walnut street, Philadelphia.

TO INVENTORS.—Patent Agency of the AMERICAN GAS-LIGHT JOURNAL.—The Proprietor of the AMERICAN GAS-LIGHT JOURNAL, is happy to announce that a

PATENT DEPARTMENT

Is now connected with these ROOMS, under the charge of

MR. F. C TREADWELL, JR.,

Well known as one of the most prompt, reliable, and able Patent Agents and Experts in the United States.

Patents taken out in this Country, and in GREAT BRITAIN, FRANCE, BELGIUM, and All other Countries where Patent Laws are in force.

Re-Issues, Rejected Applications, Interference Cases, attended to with the utmost personal care, and with MR. TREADWELL'S long experience, the interests of Patentees will be unsually secure.

Inventors are cordially invited to visit the ROOMS of the AMERICAN GAS-LIGHT JOURNAL, Iron Buildings, No. 254 Canal street, East, near Broadway, New York. JOHN B. MURRAY, Proprietor.

INVENTORS' DEPOT & SALES Room for Patent Rights.—Parties desirous of placing with us valuable Patents, for the sale of Rights, on commission, will here find the Head-Quarters for Inventors and their Patents, as well as for parties seeking investments in articles of undoubted merit. The public are invited to call, or send for Circulars. New articles coming in daily.

BUTLER, HOSFORD & CO., No. 39 Broadway, N. Y.

Proprietors of the Paragon Self-Generating Gas-Light.

TO GAS COMPANIES AND CONTRACTORS.—For Sale : One set dry lime Purifiers, 10 feet by 5 feet, 5 tiers of plates, Connections, 8 inches diameter. A Station Meter, (square case) 8 feet front, 8 feet deep, and 7 feet high ; registers 250,000 feet per diem. Also a quantity of Bench Castings, consisting of Sections of of Hydraulic main, (D shaped pattern,) Stand, Bridge and Dip Pipes. A number of Composition-faced Slide Valves, various sizes, from 6 inches to 16 inches. Address the ENGINEER OF THE MANHATTAN GAS-LIGHT COMPANY, Foot of 18th-st., North River.

OFFICE OF THE MANHATTAN GAS-LIGHT CO., NEW YORK, June 2, 1860.

AN INSTALMENT OF TWELVE and a half Dollars per Share on the Scrip Stock of the Manhattan Gas-Light Company, is required to be paid at their Office, corner of Irving Place and East Fifteenth Street, on Monday July 2d. By order of the Board.

L. H. HOWARD, Sec.

OFFICIAL.

WATER WORKS, COVINGTON, Kentucky.

Sealed Proposals will be received by the City Clerk of Covington, Ky., until the 10th day of July, 1860, for a grant of the exclusive right to establish and operate Water Works in the City, for the term of twenty-five years ; the said city at, and at any time after, the expiration of said time, to have the right to purchase the works, upon six months' notice having been previously given to the grantee of the right herein proposed to be transferred, at a valuation by disinterested parties. For further particulars address the undersigned.

By order of the City Council. C. H. MOOAR, Ch'n of Com. on Internal Imp'ts.

Covington, Ky., April 10th, 1860.

E. V. HAUGHWOUT & CO., 488, 490, & 492 BROADWAY, Cor. of Broome-St., New York,

Gas-Fitters & Contractors for the Erection of Gas-Works.

MESSRS. E. V. HAUGHWOUT & Co. have on hand a most extensive assortment of the newest and most desirable styles of CHANDELIERS, BRACKETS, LAMP POSTS, AND GAS-FIXTURES OF EVERY DESCRIPTION, to which they would respectfully call the attention of the public.

Gas-fitting done in the most workmanlike manner, and on reasonable terms.

FREEZING OF GAS-PIPES.—Walton's Patent Anti-Freezing Apparatus illustrated by engravings, in the AMERICAN GAS-LIGHT JOURNAL, of Jan., 1860, page 141, is the most simple, durable and efficient of any known process.

According to Professor Faraday, the watery vapor contained in illuminating gas amounts to 0·0093 parts where the gas is at a temperature of 40°, or in other words, that there are 1, 7-10 *gills water in every* 1,000 *cubic feet of gas* at that temperature. It is the deposit of this water in the form of frost that closes the exposed pipes.

Walton's plan is, in a few words, to supply this water with a sufficient quantity of alcohol (98–100ths), the vapor of which will enable it to pass through the most exposed pipes, unaffected by frost. Experiments of three years prove that one gill of such alcohol will protect 1,000 feet of gas at any temperature. Private houses, Hotels and Gas-works, can be thus guarantied from frost by the use of Walton's Anti-Freezer, which consists of but two or three small castings, at the most trifling cost. It can be applied at Gas-works without altering any of the pipes ; and the expense of labor and the alcohol will not exceed two cents per 1,000 feet of gas.

It can be seen in operation at the rooms of the AMERICAN GAS-LIGHT JOURNAL, where orders will be executed at once.

Read the Following Testimonials :

GAS WORKS, CINCINNATI, O., 24th May, 1858.

MR. JOHN WALTON, Louisville, Ky. :

DEAR SIR,—At an earlier date, I intended to have written you the result of my experience during last winter, in regard to your patented apparatus to prevent the freezing of gas in pipes. I am quite convinced that both in theory and practice your apparatus is correct, and in no case will it fail to prevent the freezing in pipes of our illuminating carburretted-hydrogen gas, provided attention is paid to renew the alcohol often enough in proportion to the amount of gas passing through the anti-freezing apparatus.

Yours truly, JOHN JEFFREY.

OFFICE LOUISVILLE, KY., GAS CO., March 30th, 1860.

In the winter of 1856, this Gas Company first applied John Walton's patent method for the prevention of Frost in Service Pipes,—to this date we have used it with perfect success. *This Company have Purchased the Right to this Patent for Louisville, Kentucky.*

The application of a vessel, containing a small quantity of alcohol, placed between the gas main and an open area connected with a building, through which the service pipe was laid, has always prevented the freezing or stoppage of the service pipe, although the temperature may have ranged from the freezing point to several degrees below zero.

As the alcohol absorbs from the gas any vapor of the water that may be passing off with it, after passing the vessel containing alcohol, there remains in the gas nothing that can freeze or close the pipe. *This simple application, we have proved to be an effectual safeguard against the closing of gas pipes with frost*

ROBERT G. COURTENAY, President.

H P. GENGEMBRE'S PATENT, Non-Freezing and Non-Evaporating Gas-Meter Fluid.

A meter once filled with this fluid, costing only from 10 to 15 cents per gallon, will require no further attendance ; will allow any amount of gas to pass through without affecting the level of the Fluid, and will work equally well in winter or summer, however exposed it may be.

I have appointed A. L. BOGART, No. 592 Broadway, New York City, my Agent for the New England States and the State of New York ; and A. DOIST, Box 1180, Cincinnati, O., my Agent for the balance of the United States ; but no assignment or licenses for using my patent will be valid without being ratified and signed by myself.

H. P. GENGEMBRE, Box 48, Allegheny City, Pa

J. H. BRUNDAGE & CO.,

38 BURLING SLIP, NEW YORK, DEALERS IN

ROSINS ADAPTED ESPECIALLY TO GASMAKERS' USE.

N. B.—J. H. B. & CO. ARE CONSTANTLY PURCHASERS OF ROSIN-GAS TAR.

ADDISON POTTER,
Willington Quay,
Near Newcastle upon-Tyne, England,
Manufacturer of Clay Retorts, Fire Bricks, and every description of Fire Clay Goods.

TO GAS-COMPANIES, ENGINEERS, Merchants, Gas-Fitters, Surgical Instrument Makers, &c.
FLEXIBLE GAS TUBING.

The existing great demand for Hancock's ENAMELLED or GLAZED FLEXIBLE TUBING, and the increased facilities of manufacturing it, is an assurance of the satisfaction experienced by the public in the use of this article, so extensively made by JAMES LYNE HANCOCK, OF LONDON, who begs now to announce to the trade, that he continues to export, to a large extent, FLEXIBLE GLAZED TUBING for GAS, Surgical and other instruments, now in such general use amongst Gas Companies, Engineers, Gas-fitters and others.

This is the only TUBING that perfectly resists the action of coal gas. It is made of all sizes, from ¼ inch up to 1½ inches, and in 60 feet lengths. The measure is always external diameter, to connect the usual metal fittings.

SOLID VULCANIZED INDIA RUBBER TUBING, for GAS, WATER, &c., made of all sizes, and in 60 feet lengths, either with or without spiral wire inside.

For price lists and any other information, apply to JAMES LYNE HANCOCK, VULCANIZED India Rubber Works, 8 Goswell Road (opposite Spencer street), LONDON, E. C.

☞N. B.—Orders by post, with remittance, or good reference in England, will be promptly executed.

WILLIAM RYDER,
General Mineral and Metal Agent and Merchant, 4 Dean street, Newcastle-on-Tyne, England, is prepared to supply Gas Companies and others with every variety of appliance for the production and supply of Gas, including Gasometers, Retorts (metal and clay), Fire Bricks, Coals, Metal Mains, Tubes, in wrought iron, copper, brass, lead or composition, Metals, Taps, Fittings, &c., &c.; and from his extensive experience in this class of work, can guarantee every thing of the best description.

JOHN ROGERSON & CO., New-Castle on-Tyne & Middlesbro'-on-Tees, London, supply Gas Coal, Clay Retorts, Cast Iron Pipes and Retorts, Gasometers, &c. A partner of the above house being now in this city, will be glad to wait upon any gas company requiring supplies. Agents, MEAD & BELL,
17 William street, New York.

HIGHLY GLAZED FIRE CLAY Pipes, for Sewerage and Water Purposes, Gas Retorts, Fire Bricks, &c WILLIAM McKEAN, 74 Broadway, New York, agent for the "Field-House Fire-Clay Works," Huddersfield, England, is prepared to treat with corporations, Contractors, and Gas Companies, &c., for the supply of the above articles, either in Liverpool, or delivered at any important port on the Atlantic coast, from New Orleans to Montreal. The Field-house Pipes have been used for the sewerage of the principal cities and towns in England, and are now being extensively used for the sewerage of the city of Brooklyn, N. Y. They are impervious to moisture or decay; will stand great internal and external pressure, and are cheaper than either brick or stone sewers

Further information can be obtained by application to WILLIAM McKEAN, 74 Broadway.

Pipe Yard—Furman street, between Joralemon and Atlantic streets, Brooklyn.

NEW YORK FIRE-BRICK Manufactory. (Branch Works at Kreischerville, Staten Island.)
B. KREISCHER & CO, office 56 Goerck street, corner Delancy street, New York.
Gas-House Tiles and Fire Brick of all shapes and sizes. Fire Mortar, Clay, and Sand articles of every description made to order at the shortest notice. B. Kreischer, M Maurer, A. Weber.

PATENT PYRO-CLAY GAS RETORTS. THOMAS HOADLEY, Patentee, wishes to call the attention of Gas-engineers to these Retorts, as a very superior article.
References:—Gas-Light Works, Buffalo, N. Y.
" " Cleveland, O.
" " Chicago, Ill.
THOS. HOADLEY, 34 Front st., Cleveland, O.

CELLULAR GAS RETORTS. C. M. CRESSON'S CELLULAR GAS Retorts, Patented October 3d, 1854. Adapted to the manufacture of GAS from Rosin, Coal, Wood, &c., and now in use at the Philadelphia Gas Works. Patent Rights for sale. For information apply to HENRY S. HAGERT, Attorney for Patentee, S. E. cor. of Walnut and Sixth streets, Philadelphia, Pa.

GAUTIER'S CLAY RETORTS.—Fire and Arch Bricks. Gas-House Tiles, &c. Black Lead Crucibles for Steel Works and Brass Founders.
MANY, BALDWIN & MANY, 49 John-st., N. Y.

ENGLISH FIRE BRICKS, Rufford's Stourbridge Bricks, Stourbridge and Welsh Clay.
S. THOMPSON'S Neph., Imp'r, 45 Gold-st.

JOHN NEWKUMET, Philadelphia Fire-Brick Works, Vine and Twenty-third Streets, Philadelphia.
Manufacturer of all kinds of Fire-Brick, Gas-House Tiles, to suit all the different plans in use. Clay Retorts and Dentists' Muffles. Orders filled at short notice.

COWEN'S PATENT FIRE-CLAY Retorts.
JOSEPH COWEN & Co., Blaydon Burn, near Newcastle-on-Tyne, England, were the only parties to whom a Prize Medal was awarded at the Great Exhibition in London, of 1851, for "Gas Retorts and Other Objects in Fire Clay."
J. C. & Co. have been for many years the most extensive manufacturers of Fire Clay Retorts in the United Kingdom; and orders for Fire Clay Retorts of all shapes and dimensions, Fire Bricks, and every other article in Fire Clay, are promptly executed at their works as above.
COWEN'S GARESFIELD COAL AND COKE.
Coal and Coke office,
Quay Side, Newcastle on-Tyne.

CLAY RETORTS.—J. K. BRICK & Co.—Brooklyn Clay Retort and Fire-Brick Works, Van Dyke, near Van Brunt street, Brooklyn, N. Y.—Manufacturers of Clay Retorts, Fire Brick, Gas and Hot House Tiles, Arch, Furnace and Cupola Brick, Fire Cement, Mortar, &c.
J. K. B. & Co. would invite the attention of Gas Companies to the important fact, that the Clay Retorts manufactured at their Works can be set without Tiles, requiring to be supported only at the front and rear ends, thereby exposing the entire surface of the Retort to the direct action of the flame from the furnace.
The results of this mode of setting, are a Saving of Fuel, Tiles, Transportation of Materials, Labor and Space, thereby enabling Gas Companies to set Retorts of at least 50 per cent. greater capacity than those usually employed in the ordinary arches.

FOR SYMMES' PATENT RETORTS, Mouthpieces, &c. address—
ELLIMAN BROTHERS, 217 Pearl-st., New York.
MORRIS, TASKER & CO, Philadelphia.
HORATIO EAGLE, 254 Canal-St., New York.
Or H. K. SYMMES, Newton, Mass.

KENNEDY'S Method of Securing Iron Mouth Pieces to Clay Retorts.—The Retort is made in the usual form, but without any bolt-holes through the flange. An iron collar made in two pieces, is then placed around the Retort behind the flange, and bolted to the mouth-piece by bolts which pass just outside of the flange instead of passing through it. As each Retort costs about $30, and as the breaking out of the bolt-holes entirely ruins the whole Retort, the importance of this simple but valuable improvement will be readily appreciated.
By this improvement the mouth-piece is firmly attached to Clay Retorts in a simple and very substantial manner, the bolts passing from the yoke to the mouth-piece on the outside of the Retort. The yokes are furnished at a low price, ready to be put on. Address the Patentee,
JOHN P. KENNEDY,
Trenton, N. J.

THE AUBIN GAS-WORKS CO., (No. 44 State street, Albany, N. Y.,) will refer parties wanting Gas-Works for Villages to seventeen of their Village Works now in operation in the United States and the Canadas in *every one of which the profits of the company are ten per cent. and upwards, and yet good gas is furnished.* Agents wanted to extend the sale of the Aubin Portable Gas Stove for dwellings, factories, &c., which will make 1000 feet of gas in five hours, and with greater simplicity, safety and economy, than any other known apparatus.

RICHARDSON, BOYNTON & CO.
MANUFACTURERS AND DEALERS in Boynton's Furnaces, Bullard's, Steam Heaters, Morning Star, and Pierce Ranges, Stoves, &c., No. 260 Canal street, a few doors ast of Broadway, New York.
H. A. Richardson. N. A. Boynton. J. A. Durkee.

Cast Iron Street Lanterns, neat and very durable.
For sale by John Jeffrey, Cincinnati, Ohio.
Street Lanterns cast in three pieces, which are fitted together without bolts, rivets, solder or other fastenings; glazed without tins, putty, or catches; the glass slipping into grooves cast in the lantern. These lanterns have been adopted, and are now used, by the City Councils of Cincinnati, O., Covington, Ky., and other cities.

STUART & PETERSON, Willow street, above Thirteenth, Philadelphia, Manufacturers of Lamp Posts and Cast Iron Street-Lanterns.
P. S.—Our Cast Iron Lanterns are warranted to out last three Tin Lanterns.

STEPHEN SCAMMON, Gas Engineer and Contractor for the erection of Gas-Works; also, dealer in Cast and Wrought Iron Pipe for Steam, Water and Gas, No. 561 Broadway, New York.

A. BRONSON, Pattern and Model Designer and Maker having had twenty-five years' experience, will assist and perfect inventions and designs. Patterns and Models made of wood, iron, or brass (secretly, if desired,) on short notice.
N. B.—Stove and machine patterns of every description, made with elegance and precision.
Metallic letters for patterns always on hand.
No 102 Elm st., cor. Walker st. New York.

R. D. WOOD & CO., Manufacturers of Cast Iron, Gas and Water Pipe; Retorts, Lamp-Posts, &c. S. W. corner 4th and Chesnut streets, Philadelphia. Works at Millville, N. J.

BERGEN IRON WORKS. Established 1833.
R. A. BRICK, Manufacturer of Cast-Iron Water and Gas Pipes. Retorts, Pipes, &c., always on hand, Office 109, Leonard street, New York.

GREENE ST. IRON FOUNDRY and Machine Shop, 37 to 43 Greene street, (Office, No. 39) near Grand, New York.
Cast Iron Soil and Drain Pipe, Tees, Bends, &c.
A. & E. B. BRADY.

WEST TROY, (N. Y.,) IRON FOUNDRY.
AUGUSTUS VIELE, Manufacturer of Gas and Water Pipes of all sizes. Drips, Syphons, Bends, and Branches. The manufactures of this establishment are in use in various Gas and Water Works throughout the country.
Address AUGUSTUS VIELE, West Troy, N. Y.

HOPE IRON FOUNDRY, PROVIDENCE, R. I.
Gas-Work Castings of every description.
They would call attention to their superior Iron Retorts, which are extensively used with good satisfaction; also to E. Walcott's Patent Mouth and Lid, possessing important advantages over any other in use, and are shown in a circular which can be obtained by addressing—
JOS. P. MANTON, Agt.

EXCELSIOR IRON WORKS.—George R. Jackson & Co., (Successors to Cornell & Jackson,) 201 Centre street, cor. of Howard, New York.—Fire-Proof Doors, Vaults, Safes and Shutters, Enameled Grates and Fenders, Iron Railings, for Public Buildings, Dwellings, Balconies, Verandahs, Stair-cases, Parks and Tombs, Prismatic Platforms and Vault Lights, Columns, Girders, and all kinds of Castings for Building purposes.
☞ Casting for the Trade.

OREGON FOUNDRY, Nos. 740, 742, 744 Greenwich street, New York.
HERRING & FLOYD, proprietors, manufacture Gas Compensators of all sizes, Self-Acting Valves, Exhausters upon an improved plan, costing less than half those of English manufacture, also castings of every description for Gas and Water Works.
Herring & Floyd offer for sale Sabbaton's Patent Screening Shovels for coke and coals, made of malleable iron, of all sizes; Sabbaton's Patent Improved Cast Iron Furnace Frame and Door, arranged to protect the iron work of the door and frame from direct contact with the fire; also Floyd's Patent Malleable Iron Retort Covers, only quarter of an inch thick, but of convex form, and of great strength, as is attested by certificates from several of the leading Gas-works in America. For engravings of all the above patents see American Gas Light Journal for October, 1859, pages 66 and 71.
Samples of the above castings can be seen at the Rooms of the American Gas-Light Journal.

S. V. Merrick, J. Vaughan Merrick,
W. H. Merrick.
SOUTHWARK FOUNDRY, Philadelphia.
MERRICK & SONS, Engineers, manufacturers of every description of Gas Machinery.
Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for proving Street Mains, Centre Seals, Governors, Wrought or Cast Iron Lime Sieves for Purifiers, Purifier Hoisting Machines, &c., &c.
Address— MERRICK & SONS,
5th and Washington Streets, Philadelphia.

HUNTER, KELLER & CO., Manufacturers of
WROUGHT-IRON PIPES, AND FIXTURES
of all descriptions, for
STEAM, WATER AND GAS,
144 Centre street, New York.

TRANER & MERCER. 117 North Water street, and 124 North wharves, Philadelphia, Agents for Florence & Mercer Foundries, Elk Street Iron Works.
Cast Iron Street Mains; *Bends, Branches, Chemical Retorts, and all kinds of Castings for* Gas-works, either Coal or Rosin Works. Sheet Iron for Gasometers *cut and punched to order.* Boiler Iron *of all descriptions.* Russia Sheet Iron, Tin Plates, Block Tin, Copper, Pig Lead, Spelter, and Metals generally.

GEORGE W. KRAFT, GASOMETER and Boiler-maker, Chestnut st. wharf, West Philadelphia, manufactures Gasometers, Retort House Roofs, Water Tanks Purifying Boxes, Coal Cars, Coke Barrows, and all kinds of Wrought Iron Work for Bridges, Buildings, &c.
Particular attention paid to Alterations and Repairs.
References:
John C. Cresson, Engineer Gas Works, Philadelphia; Joseph A. Sabbaton, Engineer Manhattan Gas Works, New York; Col W. S. Campbell, Engineer Gas Works New Orleans; P. A. Sabbaton, Engineer Gas Works, Albany; Waterhouse and Bowes, Gas Engineers, Raleigh, N. C.; Joseph Battin, Newark N. J.; C. B. Dungan, Philadela.

GIRARD TUBE WORKS. Murphy & Allison, Proprietors. Wrought Iron Coke-Welded Tubes, for Gas, Water, Steam, &c. Wrought, Cast and Malleable Iron Fittings, Steam and Gas Cocks, Valves. Also, Galvanized Tubes and Fittings.
Office 1908 Market street, Philadelphia.

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Philadelphia, manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap Welded Boiler Flues,
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ARTESIAN WELL PIPES,
of Wrought or Cast Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal gas works; Cast Iron Street Mains, Bends, Branches, Drips, &c.
Gas and Steam Fitters' Tools, &c.
Stephen Morris, Chas. Wheeler,
Thomas S. Tasker, Stephen P. M. Tasker.

CAST IRON WATER, GAS, DRAIN, AND HEATER PIPES, &c.,
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J. B. BROWN & CO., Iron Founders, adjoining Railroad Depot, Peekskill, N. Y. Manufacturers of the U. S. Lamp-post Mail Boxes. Castings of every description, hard and soft, delivered in New York city. J. B. B. and Co. manufacture all the celebrated Peekskill plows, also a new line of excellent iron-beam Plows, Gin-gearing, Road-scrapers, Agricultural machinery.
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TO GAS AND WATER COMPANIES:
The undersigned, Agent for Messrs. Thomas Edington & Sons, Phenix Foundry, Glasgow, Scotland, is prepared to contract for all descriptions of Cast iron Pipes of their manufacture.
About 6000 tons of these Pipes have lately been supplied to the Brooklyn Water-works, N. Y., and the Chief Engineer of the Works, A. P. Kirkwood, Esq., is ready to testify to their excellent quality.
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IRICK, COLE & CO., Lumberton Iron Works, Lumberton, Burlington Co., N. J., Manufacture Cast Iron Water and Gas Pipes., and Connections of all kinds, and every description of Gas Works Castings, Tank Plates, Columns, Lamp Posts, Cast Iron Rails, all of the very best material and workmanship. The City of Brooklyn, N. Y., has already used near 6,000 tons Water Pipes, manufactured at our Works.

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PIPE, PIPE, PIPE, PIPE, PIPE. —Plumbers, and all others who use Cast-Iron Drain Pipe, will do well to call at the Pipe Foundry, 39 Greene street. A large lot of Five and Six Inch, Seven Foot length, on hand, and for sale low. A. & E. B. BRADY.

DRAIN—PIPE. JAMES P. HAMMILL, Importer and dealer in best English Fire-Brick, Floor, Malt, and Roofing Tiles, Drain Pipe, Gas Pipe, &c.
165 Water street, New York City.

WATERHOUSE & BOWE Builders of Gas-Works, Raleigh, N. C.—Gas-Works erected in any part of the United States.
REFERENCES.

J. H. Carson,	Pres't,	Charlotte,	N. C.	Gas-W'ks.
D. G. Fowle,	do.	Raleigh	do.	do.
J. C Smythe,	do.	Salisbury	do.	do
Arch. McClean,	do.	Fayetteville	do.	do.
Jos. A. Waddell,	do.	Staunton	Va.	do.
A. G. Story,	do.	Little Falls	N. Y.	do.
G. H. Young,	Prop'r	Waverley	Miss.	do.

Wm. Johnston, President of Charlotte & S. C. R. R., Charlotte, N. C., A. B. Wood, Agent Reading Iron Works, 57 Maiden lane, N. Y., Cornelius & Baker Manufacturers of Gas-fixtures, Philadelphia.
G. B. Waterhouse. M. Bowes.

E. A. COEN, ENGINEER AND Contractor, for the erection of Coal Coal-Gas Works.
Plans and specifications furnished and Works erected for Cities, Towns and Villages. Rosin Works altered and repaired. Pipe, &c., furnished and laid for Water and Gas.
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KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for Burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning, thus rendering them

FREE FROM CRACKS AND CORRECT IN FORM.

By great care in Manufacturing, combined with the advantages in burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize

RETORT OVENS, FIRE-BRICKS, GUARDS, SADDLES, RABBITTED BURS, FLUES, AND QUARRIES, ARE ALL MANUFACTURED OF THE SAME QUALITY OF CLAY.

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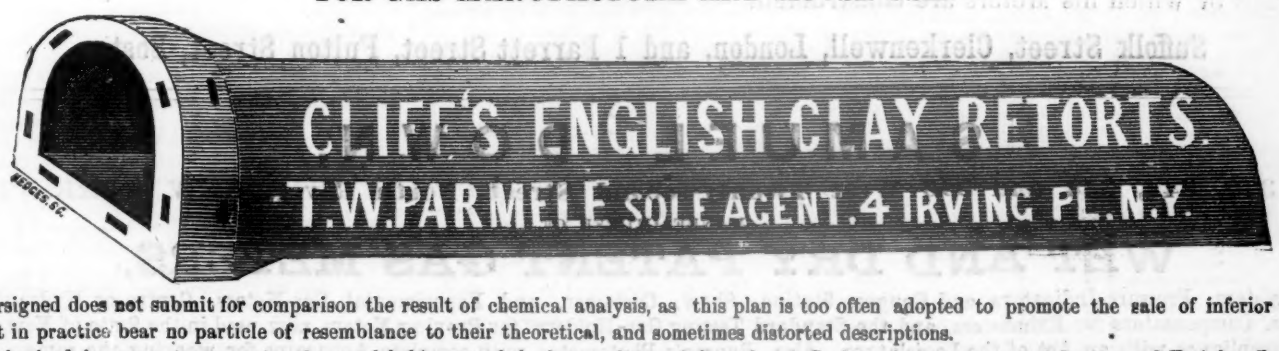

THE undersigned does not submit for comparison the result of chemical analysis, as this plan is too often adopted to promote the sale of inferior or worthless coals that in practice bear no particle of resemblance to their theoretical, and sometimes distorted descriptions.

He is authorized, however, to guarantee the *careful shipment of the best qualities of Cannel and Coal, at the lowest rates of Invoice and Freight offered at time of engagement;* and any losses sustained by short weight, or the neglect of the conditions mentioned, will be promptly and cheerfully repaired.

OFFICE OF THE MANHATTAN GAS-LIGHT COMPANY,
New-York, October 8th, 1859.

Messrs. GEORGE WRIGHT & Co., Liverpool:

Gentlemen,—For many years you have acted as agents for this company, purchasing for, and forwarding to them, coals, retorts, and other gas apparatus.

Your experience, ability and sterling integrity, entitle you to and have secured our confidence, and we cheerfully recommend your house to all gas companies desiring the services of an agent in England. My own personal knowledge of the superior quality of the coals within your control, and my acquaintance with the manufacturers of such articles as can be advantageously procured by you in England for gas companies abroad, added to my high regard for you personally, induce me to write this letter, and express the hope that you may be able to extend your business in this country, not only for your own advantage, but also for the benefit of those who may confide in you as securely as we have done.

I am, gentlemen, your very obedient servant,

CHARLES ROOME, *President.*

T. W. PARMELE, Agent,
No. 4 Irving Place, New-York,
GAS-EXHAUSTERS,
GOVERNORS, FURNACE DOORS,
RETORT-COVERS, CASTINGS,
IMPLEMENTS,
PHOTOMETRICAL AND METER-PROVING APPARATUS.

HARRIS & PEARSON,

PROPRIETORS OF

BEST GLASS-HOUSE POT, AND CRUCIBLE CLAY.

Manufacturers of Fire-Bricks, Gas-Retorts, and Glass-House Furnace-Bricks of every description.

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GAS, STEAM, SMOKE, PURE WATER AND SOIL PIPE,

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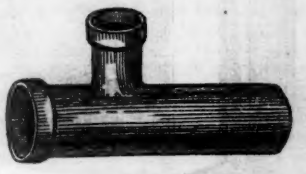
AND EVERY VARIETY OF FIRE GOODS.



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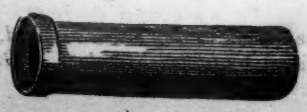

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MANUFACTORIES

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THOMAS GLOVER introduced his PATENT DRY GAS METERS into the United States and Canadas in 1846, and since that time he has received extensive patronage from many Gas Companies of those countries as well as from this. Thomas Glover confines his sole attention to the business of Gas-Meter making. The propriety of his doing so is satisfactorily proved by his success. For example: one London Company has now in use above 12,500 of his Patent Dry Gas-Meters, and some of these Meters have been fixed for fourteen years and are still in working order, without complaint from either the company or the consumer.

THOMAS GLOVER thinks it necessary to put Gas Companies on their guard against parties selling Patent Dry Gas-Meters constructed in imitation of his, but unskilfully made on erroneous principles, and with improper and unsuitable materials.

THOMAS GLOVER'S Workshops are now the most extensive in this or any other country, and he is thereby enabled promptly to execute orders to any extent required. Purchasers may, at any time, inspect his Works and the materials of which his Meters are constructed.

Suffolk Street, Clerkenwell, London, and 1 Barrett Street, Fulton Street, Boston.

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MANUFACTURER OF

WET AND DRY PATENT GAS METERS,

Pressure-Registers, Pressure-Indicators and Gauges, Station, Show, Customer, and Experimental Gas-Meters, Centre or Hydraulic Valves, Governors, Compensators for Exhausters, and the Standard Testing Gas-Holders* for Proving Meters, now used in the State of New York in compliance with an Act of the Legislature. Also, Bunsen's Photometer, with complete Apparatus for working the same.

*The standard of measurement of this Gas-Holder is given by Professors TORREY, of the U. S. Assay Office; JOY, of Columbia College; GIBBS, of the Free Academy and several other distinguished scientific gentlemen.

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ROTARY VALVE,

And Patent

INLET CONDENSING CHAMBER

DRY GAS-METER,

And to their

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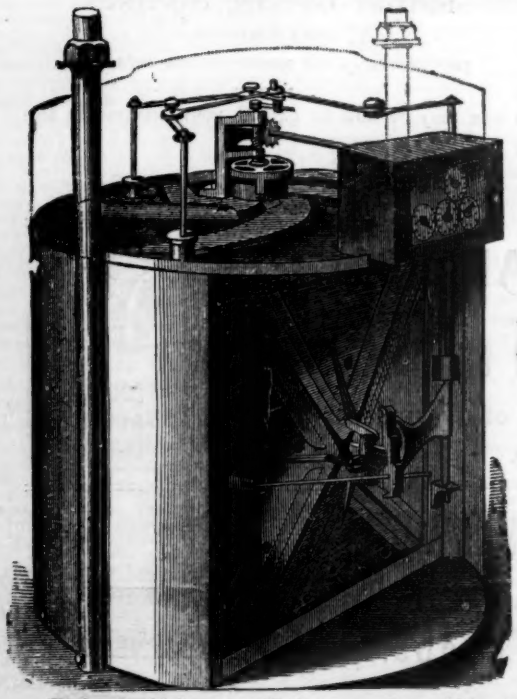
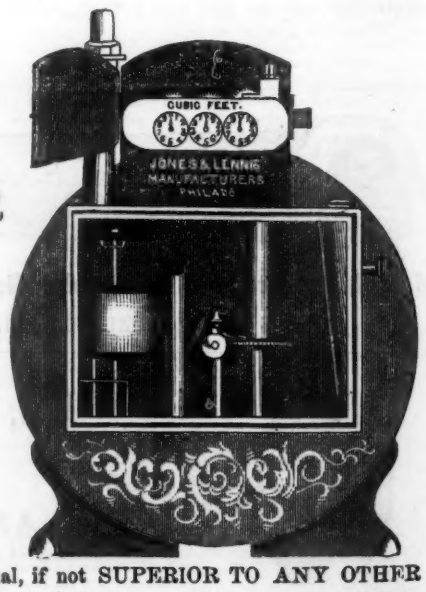




Both of which are certified, by experienced Gas-Engineers, Builders and Superintendents of Gas-works to be equal, if not SUPERIOR TO ANY OTHER METERS MADE.

An impartial trial and examination will *convince* every *intelligent* and *unprejudiced* mind of the *vast superiority*, not only of their *utility*, but also of their *Workmanship* and *Materials*. The materials used in their construction are *unsurpassed* in quality, and *undoubted* satisfaction is *guaranteed* to all purchasers.

Our Manufactory is now one of the *most extensive* in this Country, and we are thereby enabled promptly to execute orders to *any extent required*.

Our Meters speak for themselves, and we *caution* Engineers and Gas Companies against believing or being misled by *libelous circulars*. *Gas Officers are too intelligent to be deceived by such a series of misrepresentations.* We challenge superiority in both our Wet and Dry Meters.

THE MOTION OF GASES.

[*Continued from page* 251, *Vol. I. of the* AMERICAN GAS-LIGHT JOURNAL.]

We come now to consider an application of the *principle of work*, explained in the previous article, to the motion of fluid masses. There may be two practical cases: first, of fluids—either liquids or gases—in motion without sensible compression or expansion; secondly, of fluids—gases solely—in motion with sensible compression or expansion.

WORK OF THE MOVEMENT IN MASS OF A LIQUID UNATTENDED BY SENSIBLE COMPRESSION OR EXPANSION.

30. Let us suppose the case of a piston working in the cylinder of a water pump. The column of water moved during a stroke of the piston has a certain total vertical hight, which we may designate by H, as, for example, the hight of the point of discharge above the surface of the reservoir of supply. This column of water produces a pressure on the piston, which we may represent by p, for each surface unit of the transverse section of the piston, so that, if A represent the transverse section of the piston, we shall have

$$P = p\,A = \textit{working pressure on the piston};$$

or, if d represent the density of the fluid, and W the total weight for the hight H, we shall have

$$[37] \quad P = W = d\,A\,H = p\,A,$$

as equivalent expressions for this pressure. If, now, s represent the length of stroke and U the work of a stroke, we shall have by [35]

$$[38] \quad U = P\,s = W\,s = d\,A\,H\,s = p\,A\,s,$$

where we neglect at the present time all consideration of the work additionally due to friction and other prejudicial resistances. But it is evident that a volume of the fluid is displaced, or moved, during each stroke of the piston, which is represented by

$$V = A\,s;$$

hence, the work expended on each stroke may be expressed by

$$[39] \quad U = P\,s = d\,A\,H\,s = V\,p;$$

or, the work is equal to the *product of the displaced volume and pressure unit.*

31. Again, let us suppose the case of a piston working in a steam cylinder. The elastic force, or tension, of the steam produces a certain pressure on the piston, which may be represented by

$$P = p\,A = \textit{working pressure};$$

where, as before, p is the pressure on a unit of section, and A the area of the section of the piston. Now, this pressure will be *constant*, in accordance with our present hypothesis, if we suppose the supply of steam to be continuously proportional to the displacement of the moving piston; so that, the density of the steam remaining constant, there can be neither compression nor expansion. Hence, as in the previous case, we shall have

$$[40] \quad U = P\,s = p\,A\,s = V\,p;$$

or, the work is still equal to the product of the displaced volume and pressure unit. What is thus true of the action of steam, would obviously be equally true of any other gaseous body.

WORK EXPENDED ON COMPRESSION OR DUE TO EXPANSION OF A GAS.

32. Let us resume the second of the previous illustrations—that of the piston working in a steam cylinder; and let it be supposed that, at a certain moment, *the supply of steam is cut off*, and the volume of steam previously introduced begins to expand, driving the piston before it. It necessarily follows that, as the initial volume of steam increases by expansion, its elastic force or tension undergoes a corresponding diminution. Now, there may be two practical cases: the change of volume may be too gradual to induce any sensible change of temperature; or, the change of volume may be so sudden as to cause a sensible change of internal temperature; and these two cases correspond respectively to those mentioned in Secs. 17 and 18.

33. *First, the work of gradual expansion or compression.*—Let s represent the distance through which the piston moves prior to the commencement of expansion, and let p be the constant tension during this period; then we shall have

$$P_1 = A\,p_1 = \textit{working pressure on piston},$$
$$V_1 = A\,s_1 = \textit{volume of steam used};$$

hence the work due to the inflowing steam, prior to the expansion, becomes, as in [40],

$$[41] \quad U_1 = P_1\,s_1 = A\,p_1\,s_1 = V_1\,p_1.$$

Again: let s represent the whole distance through which the piston moves prior to any moment during the expansion, and let p be the corresponding tension at the same moment; then we have

$$P = A\,p, \quad V = A\,s,$$

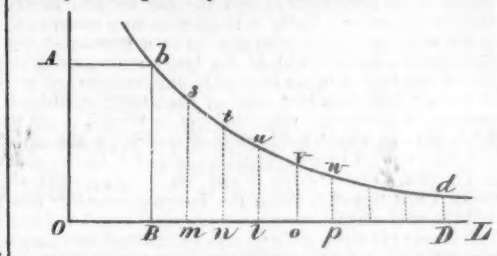
for the corresponding working pressure and expanded volume of steam. But since, with our present hypothesis, there is no change of temperature during expansion, the tension must vary inversely as the volume, in accordance with the law of Mariotte, sec. 16; hence the relations

$$\frac{P}{P_1} = \frac{V_1}{V} = \frac{A\,s_1}{A\,s};$$

or,

$$[42] \quad P = P_1\,\frac{V_1}{V} = P_1\,\frac{s_1}{s};$$

that is, the working pressure, P, varies inversely as the distance, s, traversed by the piston. We have, then, a working distance $s\ s_1$, and a working pressure, P, for every point of this distance obtainable from [41], corresponding to the proper value of the distance s. The law of the working pressure being known, the work may readily be computed by various methods.



34. In order to compute this work, let us proceed in the manner indicated in sec. 29, by constructing a curve of pressure, and then determining the area of the curve. For this we take a right line, $O\,L$, on which to represent the distances traversed by the piston during its successive positions—all reckoned from O corresponding to the point of departure of the piston. Make $O\,B = s_1$, the initial distance, and $O\,D = s$, the terminal distance; then $B\,D = s - s_1$, the working distance during expansion. Next, we divide the distance $B\,D$ into any number of equal parts, $B\,m$, $m\,n$, $n\,l$, etc., and erect the perpendicular $B\,b$, $m\,s$, $n\,t$, etc., making their lengths respectively proportional to the working pressures (computed by [42] for the different values of s corresponding to these points); then drawing the curve $b\,s\,t\ldots d$ through the extremities of the several perpendiculars, we have a graphical representation of the law of varying pressures. Now, the area of this curve, that is to say, the area of the space between the right line $B\,D$ and the curved line $b\,d$, represents the work due to the varying tension during the progressive expansion of the steam from the initial volume V_1 to the volume V. Such an area may be obtained to any desired degree of approximation, by taking the points of division $B\ m\ n \ldots\ldots D$ sufficiently near each other, and computing the partial trapezoids, $B\,b\,r\,m$, $m\,r\,s\,n$, etc. But in this case, we may readily find a convenient algebraical expression for the area. Since the ordinates, $B\,b$, $m\,r$, etc., which represent the pressures $P_1 \ldots\ldots P$, are inversely proportional to the distances $O\,B$, $O\,m \ldots\ldots O\,D$, (or $s_1 \ldots\ldots s$,) which represent the volumes $V_1 \ldots\ldots V$, the curve possesses the well-known property characteristic of the *rectangular hyperbola* the area of which has the following expression in hyperbolic or Napierian logarithms.

$$\text{Area} = \overline{O\,B} \times \overline{O\,A}\ [\text{hyp. log. } \overline{O\,D} - \text{hyp. log. } \overline{O\,B}];$$

whence, placing U for the work represented by this area, and substituting the algebraic symbols for the geometrical lines, we have

$$U = P_1\,s_1\ [\text{hyp. log. } s - \text{hyp. log. } s_1] = P_1\,s_1\ \text{hyp. log.}\frac{s}{s_1};$$

or, since

$$P = A\,p_1, \quad A\,s_1 = V_1, \quad \frac{s}{s_1} = \frac{p_1}{p},$$

we finally have—

$$[43] \quad U = V_1\ p_1\ \text{hyp. log.}\frac{p_1}{p},$$

Thus we have an expression for the work due to the expansion of steam, or any other gaseous fluid; and since the factor V_1, or the initial volume, is entirely independent of any particular form of the vessel, this expression is equally true for any form of the fluid mass, whether cylindrical, as here supposed, or otherwise.

35. It is manifest that the area of the rectangle

$$\overline{O\,B} \times \overline{O\,A} = P_1\,s_1 = V_1\,p_1$$

represents the work due to the inflow of steam under the constant pressure p, prior to the commencement of expansion, corresponding to the case exhibited in [41]; hence the *total work* due to the inflowing steam and its subsequent expansion, is

$$U = V_1\,p_1 + V\,p\ \text{hyp. log.}\frac{p_1}{p},$$

or,

$$[44] \quad U = V_1\,p_1\left[1 + \text{hyp. log.}\frac{p_1}{p}\right]$$

36. Finally, it is manifest that, if the case were one of compression, an entirely similar curve would represent the law of pressures only in the reverse order; and the expression for the work in such a case would differ from that for expansion simply in using p for p_1, and *vice versâ*; hence, for the work of compression we should have

$$[45] \quad U = V\,p\ \text{hyp. log.}\frac{p}{p_1},$$

But since, by our hypothesis,

$$\frac{V}{V_1} = \frac{p_1}{p}, \text{ or } V\,p = V_1\,p_1,$$

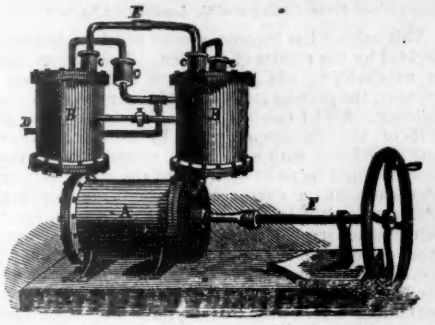
the previous expression may also be written—

$$[46] \quad U = V_1\,p_1\ \text{hyp. log.}\frac{p}{p_1};$$

so that the first factor may be taken as the product either of the initial or terminal volume and tension, both in [43] and [46].

[ADVERTISEMENT.]

GWYNNE'S GAS COMPRESSOR.



The attention of the public, and of Country Gas Companies in particular, is called to the above apparatus for compressing gas into metal cylinders, for use in Hotels, Private Houses, Cars, Steam-boats, &c., out of the reach of gas mains.

The engraving gives a side view of the Compressing Pump. The piston is driven by a screw, F, adjusted to give any required amount of power, and connected by a swivel, which prevents the piston from turning. B B, are two metal cylinders, of the same capacity as A, with which they are connected by pipes. To operate the pump, the two cylinders, B B, are filled with water to the centre leveling cock, which is then shut. When the piston is worked the water is drawn from and forced into the cylinders, B and B, alternately, the vacuum, formed as the water leaves, drawing in the gas through pipe D, which is prevented from turning by the valves, c, c; the return water forces the gas through pipe E, and the upper valves, c, c, into the portable tanks. The water passing up to the valves makes it impossible for the gas to expand and prevent a fresh charge from entering, as is the case with an air pump, and the pump working at a slow speed and throwing a large quantity at each stroke, prevents all heating of the gas.

The Company will warrant their apparatus to compress more gas by hand power, than the best constructed air-pump will by steam.

All orders or communications addressed to the N. Y. PORTABLE GAS COMPANY, No. 142 Centre street, New York, will be promptly attended to.

P. S.—The Company is also prepared to supply Gas to Country Houses, anywhere in the vicinity of New York, at $4 per M feet.

PAPER GAS-PIPES.—It is announced that recent experiments have been made in London—following out a French suggestion—with a view of testing the capacities of paper for gas ducts. The municipal authorities of Paris some time since tried tubes of this description for the conveyance of gas, and in recent experiments made in London, a piece of tube was produced which, though stated to have been used under ground as a gas pipe for twelve months, presented all the appearance of being a new pipe. The tubes, subjected to a pressure of the hydraulic process, bore a strain of two hundred and fifty pounds to the square inch without bursting—which is more than they would be required to bear in ordinary use. One of the tubes, half an inch thick, and with a bore of two inches, was also tested by weight, and it only gave way to a pressure of four hundred and eighty pounds, the bearings being three feet apart. It is stated that the tubes may be submitted to a temperature of one hundred and sixty degrees of Fahrenheit, without any deterioration in the quality of the material; and the cost of the tubing is also said to be less than one half that of the iron piping ordinarily employed for the conveyance of gas.

NON-EXPLOSIVE CAMPHENE.—Messrs. Stanford Brothers of San Francisco, Cal., advertise non-explosive camphene at two and a half cents over the market price of common camphene. Good news, if true.

COAL IN LIBERIA, AFRICA.—A letter from a reliable source in Liberia states that a vein of mineral coal, ten miles in length, has been discovered in Bassa county. Miners are to be immediately set to work. If the coal proves plenteous and good, the discovery will be one of much importance to Liberia.—*Lowell Journal.*

LOWELL, MASS.—An effort is being made to have the new Agricultural Fair Building (now fast approaching completion) lighted with gas. It certainly will be a matter of no little importance to have the building well lighted if fairs are to be held there hereafter, and it is quite right to make a good impression at the outset. The dedication (the arrangements for which are progressing encouragingly) takes place on the 18th, and it is essential that the building should then be thoroughly illuminated.

HOUSTON, TEXAS.—A proposition has been made by the authorities of this town to a gentleman of Cincinnati to erect gas-works, and as soon as the preliminaries are arranged the works will be commenced.

CAMDEN, N. J., IRON WORKS.—The business of this establishment is enormous. The amount of cast iron manufactured by them last year was 13,000 tons. They cast all their pipes vertically. The proprietors are Messrs. I. W. and J. F. Starr.

COPENHAGEN.—A gas made from peat has been burned in Copenhagen, and is said to give a stronger and a whiter flame than coal gas. Whether more economical for municipal purposes remains to be computed.

THE CARBURATION OF GAS.

By M. Lefebvre.

From Le Gaz, and the London Gas Journal.

This subject has become almost obsolete, having been decided by the results of practice. The various methods of napthalizing gas having been abandoned, one after another, the process itself is no longer adopted in gas-lighting. Still I think it may be useful to state the results of the experiments made by me when carburation was introduced with unanimous approbation. Nothing, indeed, could be more alluring to the gas consumer. He was taken into a dark room, where a burner, supplied with comparatively poor gas, gave so feeble a light that he could not see to read at the distance of a few yards: then, all at once, the same burner gave a brilliant light, the letters became visible, and all that had been done to produce the effect was, to pass the gas through a bottle containing a few drops of liquid. The apparatus was very simple; the liquid did not become exhausted, and there seemed to be a direct saving easily made. But when, instead of carburating the gas for a single burner, it became necessary to extend the operation to ten, twenty, or a hundred burners, the question changed. The dangers multiplied, and the difficulties increased more rapidly than the intensity of the light. On account of these drawbacks, the plan fell into disuse. We live in an age, however, when we should look indulgently on Utopian schemes, which may, some day or other, become practicable; and the genius of invention should always find, if not praise, at least attention, even in its wildest speculations.

The first question which it became necessary to consider, on entering into this inquiry, was the kind of napthalizing apparatus that should be employed. There were so many, and, as laboratory experiments had proved that they all enriched the gas, and greatly increased its illuminating power, it appeared that the only difficulty arose from the embarrassment of choosing, when all were so good. My choice of napthalizing apparatus being limited, I directed my attention, in the experiments I am about to describe, to ascertain the required physical conditions of the carburator for the several kinds of apparatus I had at command, or of which I had read. I perceived that all the inventors had entertained the opinion that the object to be attained was, to make the gas take up a large quantity of carbon vapor; and they endeavored, by every possible means, to prolong the contact of the gas with the liquid. We shall shortly see what experience has determined in this matter; but theory alone was sufficient to condemn these attempts. Hydrocarbons emit vapors; the vapors mix with the gas, and that mixture must obey the ordinary physical laws which regulate mixtures of vapors and gas.

The effect depends, therefore, on pressure and temperature, and not on the quantity of liquid exposed to the action of the gas. A single fact shows this; it is, that the gas carries along with it mechanically, not only the vapor but, *particles of the hydrocarbon*. The following are the general arrangements that I adopted in my experiments:

In the first place, I had an experimental meter furnished with its index; and, at the outlet, the gas might be sent, as desired, along either one or other of two pipes, each of which was furnished with a stop cock. On opening one of the stop-cocks, the gas was carried directly to the burner of the photometer; and, on closing that one and opening the other, the gas passed through the napthalizing apparatus. The first carburator that I used was a simple vessel fitted with tubes, through one of which tubes the gas was conducted just above the surface of the liquid, without touching it, and it escaped through the other tube to the photometer burner.

The photometer I used in all my experiments was M. Durand's, with a rose-colored gelatine eye-piece. I was well satisfied with it, after making some slight alterations. The sight-box was surrounded with a kind of chest, forming a funnel, which I had made of card-board, and the interior was lined with unglazed black paper. This arrangement has the advantage of not exposing the flames to be tested, the rays of which fatigue the eye and disturb the results. A small copper rod, attached to the foot of the candle-holder, enabled me to vary the distances, without having an assistant. The burner I employed in nearly all my experiments, was a steatite batswing burner. Its consumption of gas per hour, tested with the greatest care, was 60 litres (366 cubic inches) with a pressure of 20 millimètres (8-10ths of an inch), at which pressure all my experiments were made.

In napthalizing the gas by means of the apparatus above described, the first results obtained were:

	Intensity without carburation.	*With carburation*
Experiment a	2·17	4·93
" b	2·87	4 03
" c	2·87	4·93

I then substituted another carburator for the first one, which realized the conditions that inventors had desired to obtain. I took some tubes shaped like the letter U, such as are frequently used in chemical experiments for drying or absorbing gases. I filled these tubes with pumice-stone steeped in benzole, taking care that there should not be an excess of benzole to obstruct the passage of gas through the lower part of the tube, which would have changed the pressure and caused the gas to *dance*. By uniting two such tubes, each 30 centimètres (about 12 inches) in height, the gas was compelled to traverse 1 20 metre (four feet) of an atmosphere charged with carbon vapor. It is evident that no carburator to be used practically, could impart such a high degree of carburation. The following are the photometric results:

Common gas.			*Naphthalized gas.*
2·68	....	....	5·90
2·77	....	....	5·90
2·87	....	....	5·90
2·87	....	....	5·90

It appears, from the foregoing experiments, that the pumice-stone carburator caused the gas to gain nearly the addition of one candle in its illuminating power compared with the other carburator. But a portion of the carburetting liquid might, in the latter experiments, arrive at the burner in the form of liquid particles and not of vapor; therefore, that mode of naphthalizing, though perhaps advantageous when the gas is burned close to the apparatus, might not have been superior to the other if it were carried to some distance, as would be the case in practice. Endeavoring to test this opinion by experiment, I first placed between the last pumice stone tube and the photometric burner, a large glass vessel holding two litres (122 cubic inches), into which I had introduced a number of glass tubes for the purpose of arresting the liquid particles carried off by the gas; the gas being conducted to the bottom of the vessel and escaping to the burner from the top. The results were, that the naphthalized gas indicated an illuminating power of 5·, instead of 5·90, as in most of the experiments with the pumice-stone carburator.

There was still a slight difference in favor of the pumice-stone carburator compared with the other. To ascertain the consumption of benzole in the two, the pumice-stone carburator was carefully weighed, and I lighted the burner. When I had finished the experiment, the burner had consumed 93 litres (nearly four cubic feet) of gas. The carburator was then weighed, and the loss of weight amounted to 4·5 grammes (70 grains), which would be equal to a consumption of 4·83 grammes of benzole per cubic mètre of gas.

The same experiment was made with the carburator without pumice-stone. The consumption of gas during the experiment was 286 litres, the loss of weight was 12·50 grammes, which was equal to 43·7 grammes per cubic mètre of gas. The same experiments were repeated several times with nearly similar results; which proved that the pumice-stone carburator always consumed more benzole, and that the luminous intensity of the gas was not in proportion to the increased expenditure.

In order to approach more nearly to practical results, I substituted for the large glass vessel, a coiled lead pipe, ten mètres long, and ten millimètres in diameter. The first experiment gave the following average results:

Common gas.	*Naphthalized gas.*
2·87	3·30

In making the last experiment, I was led to consider the effect of temperature on the illuminating power of the gas. In the preceding experiment, I had found that, in passing through ten mètres (about 13 yards) of lead pipe, there had been a considerable diminution of the illuminating power. The pipe had been brought from a warehouse where the temperature was below 0° (32° Fahr.), and the photometrical observation had been made as soon as the two ends of the pipe were attached to the apparatus. On repeating the experiment, several hours afterwards, the laboratory having been maintained at a temperature of 15° (59° Fahr.), I found the illuminating power of the napthalized gas had increased to 4·93, whilst the ordinary gas retained its former luminosity of 2·87. These experiments led to the following conclusions:

1. The carburation of gas is completely effected the moment that it passes through a saturated atmosphere.

2. The temperature possesses an influence which requires to be considered.

Since the carburation is limited by the law of saturation, it is useless to endeavor to construct combinations of apparatus. A space of any kind saturated with carbon vapor, is all that is required. I therefore adopted in my succeeding experiments, an apparatus similar to the first one I had employed, with the addition of a reservoir with a syphon tube, to maintain the liquid at the same level. Instructed, however, by the result of the experiment with the lead pipe, in all subsequent experiments I determined with accuracy the temperature of the apparatus, which I maintained at 15° (59° Fahr.), Centigrade. The following table shows the results obtained:

Pumice Carburator.	*Common Gas.*	*Surface Carburator.*
5·90	2·68	4·75
5·	2 77	4·75
5·87	2·68	4 70
5·87	2·68	4·80
5 90	2·87	4·75
5 87	2·87	4·75
5·90	2 87	4·80

On comparing these results with those obtained in the first and second series of experiments, it will be observed that the illuminating power given by the pumice carburator, had slightly diminished. These facts did not surprise me. Attributing to the pumice-stone method of carburation a mechanical action, which the temperature cannot effect, it was natural that it should have greater influence than the other carburator. At all temperatures the gas can carry off liquid particles, but the saturation at all temperatures does not supply to the same volume of gas the same quantity of vapor.

After having established, as one express condition of the experiment, equality of temperature, it becomes interesting to observe the progress of intensity as the temperature increased. To do that, it was only requisite to place the napthalizing vessel in a water-bath which was heated by a gas furnace, the water being continually stirred about with an agitator. A mercurial thermometer indicated the temperature, the starting point being Zero (centigrade). Nothing is more easy than to regulate the temperature with a gas furnace, and to maintain it stationary during the time of the experiments.—I operated in this manner at temperatures varying from 5 to five degrees (centigrade) successively. The following are the results obtained in several series of experiments with gas carburated on the surface of the liquid, and the burner used being steatite, consuming 60 litres per hour.

Common gas.	*Naphthalized gas.*				
	0°	5°	10°	15°	20°	25°
2·68	3·0	3·0	3·30	4·9	5·5	5·45
2·68	3·0	3·0	3·30	4·9	5·6	5 60
2·77	3·0	2·9	3·13	4·9	5·4	6·00
2 68	2·9	3·0	3·30	4·7	5·4	5·60
2·77	3·0	3·1	3·13	4·9	5·4	5·60
2·68	3·0	3·1	3·30	4·9	5·6	5·60

Thus it appears the illuminating power increases with the temperature; and it must be so. But, if there be a considerable distance between the carburator and the burner, it is evident that the advantage of temperature will be lost in the passage of the gas, and that a portion of the vapor mingled with it will be deposited in the tubes. Other experiments were made with different burners and at the same temperature. With a union-jet burner, No. 5, consuming 109 litres (nearly 4 cubic feet) of gas per hour, the average results of eight experiments, which nearly coincided, were:

Common gas.	*Carburetted gas.*					
	0°	5°	10°	15°	20°	25°
5·70	5·9	6·2	7·2	10·1	11·8	12·7

With a batswing burner, consuming about 144 litres (about 5 cubic feet) of gas per hour, the average results of five nearly corresponding experiments were:

Common gas.						
	0°	5°	10°	15°	20°	25°
7.20	7·7	8·0	9·0	9·9	10·4	12·2

After having made these experiments, I arranged another to convince myself of the influence which temperature had on the carburation. I applied the same vessel I had before used, but in this instance for the purpose of *decarburizing* the gas. I kept the carburator at the temperature of 15° centigrade, and the additional vessel at a temperature of 5°. With a batswing steatite burner, consuming 60 litres per hour, under a pressure of 20 millimètres, the average results of five experiments were:

Common gas.	*Gas carburetted at 15°.*	*Gas decarburetted at 5°.*
2·77	4·8	3·5

Such a result needs no comment. It shows that the carburation should take place close to the burners, and that the cooling of the tubes afterwards should be avoided; for, without that the effect is destroyed. If we compare the effect of the carburation at 5° with that of the gas *decarburetted* at 5°, it will be seen that they are nearly alike.

The carburator with the arrangement for keeping the liquid always at the same level, having given very satisfactory results in my experiments, I endeavored to ascertain its effect on a large scale. [M. Lefebvre then attached six additional burners to his apparatus which consumed 780 litres (nearly 28 cubic feet) per hour, employing the same carburator. The photometric results were found to be very dissimilar; and after making fifteen unsatisfactory experiments, he enlarged the size of his carburetting vessel to ten times its previous capacity, when the experiments closely agreed; the common gas being 2·80, and the carburetted gas 4·5, which nearly approximated to the former experiments with a single burner].

There unfortunately remains a gap to be filled up to complete this series of experiments. The want of time, of means, and the failure of my eyesight, prevented me from doing so. There remains to be determined, what is the *minimum* capacity necessary for the carburator, but the experiments ended here. I shall now, therefore, submit some considerations respecting the use of napthalization, and discuss its advantages, its economy, and its inconveniences.

We have first to examine the relations existing between the intensities of the light of common gas and of napthalized gas. On comparing all the experiments made in analogous conditions, that is to say with carburators without pumice-stone, the average relative intensities of common gas and of napthalized gas were; common gas 1, and napthalized gas 1·756; consequently, the carburation increases the illuminating power 75 per cent. and the standard burner if common gas equal to six candles, would in napthalized gas be equal to 10·5 candles. Our experiments show that that law is correct. What, then, is the evil of napthalizing corresponding to that increase of intensity? We have observed that the quantity of benzoin absorbed with one carburator is 44·4 grammes (680 grains) per cubic mètre, which for a burner of 100 litres per hour, would be equal to 4·44 grammes, and the estimated cost of the benzole at 1·4 franc per kilogramme, would amount to 0·006 for a burner consuming 100 litres per hour, the intensity of which is calculated at 10·5 candles, so that the luminous value of the gas would stand thus:

100 litres of gas at 30 centimes per cubic mètre....	fr. 0·030
4·44 grammes of benzole at 1·40 fr. per kilog.	0·006
	0·036
To obtain the same quantity of light from common gas it will cost—	
175 litres of gas at 0.30 francs per cubic mètre	fr. 0·052
Difference in favor of carburation.....	fr. 0·016

This amounts to 16 centimes per cubic mètre of gas consumed; out of which the inventor would have to be paid, and the cost of the apparatus.

I must observe, however, that in practice on a large scale, such favorable results as those given in the experiments could not be obtained. The carburator would never be placed at so short a distance from the burners, nor would it be practicable to maintain an equality of temperature between the carburator and the gas pipes;

therefore, the illuminating power of the naphthalized gas would not be so great as I have supposed. The results which have served as the basis of the preceding calculations, are those produced by the experiments conducted at a temperature of 15° centigrade. Suppose the temperature to be reduced to 10°, what then would be the result? The average of the luminous intensity of the experiments at that temperature was as 1 to 1·19; consequently, a single burner of common gas equal to six candles, would give a light of 7·14 candles, with naphthalized gas, and the relative cost of the two gases would be as follows:

100 litres of gas at 30 centimes per cubic mètre.....	fr. 0·0300
4 grammes of benzole at 1·40 fr. the kilog.....	0 0056
	0·0356

The same intensity of light would be obtained by—

119 litres of gas at 30 centimes the cubic mètre..... fr. 0·0357

It may be objected that the estimate of the expenditure of benzole is excessive, because it is supposed in the two cases to be almost equal (4 grammes instead of 4·44 grammes.)

It would be requisite to make additional experiments, to ascertain the consumption of the carburator at a temperature of 10° (50 Fahr.) but we can arrive at an approximation by assuming the quantities of benzole consumed to be proportional to the luminous intensities in the other experiments, and from that it appears that the difference in favor of the benzole would be very trifling.

The result of these experiments, therefore, shows that, if the carburation produces occasionally advantageous effects they are due to the state of the temperature, and are consequently liable to great variations.

In conclusion, the question whether advantage is to be gained by naphthalizing gas, is far from being solved. To arrive at practical results, it is requisite:

1st. That the carburation should take place near to the burners;

2nd. That the apparatus and pipes should never be at a lower temperature than 10° (50° Fahr.);

3rd. That the size of the carburator should be enlarged in proportion to the number of burners supplied;

4th. That the batswing, or the union jet burners, only should be used.

Such, in my opinion, are the only conditions on which, the plan of naphthalizing gas can be carried on with a chance of success. I have done all that can be done with napthalized gas in a laboratory. I know the field is open to inventors to apply it practically. I believe it is desirable that all commercial enterprises should, before being tried publicly, be thus subjected to the tests of the laboratory. Science is a heavy yoke, under which the boldness of the spirit of invention should pass. She restrains the strong as she helps the weak. We hope in completing our conscientious, if not able investigation, we may have been of some service to each of these classes.

Now is the time for inventors to meet this question. We will second every effort on the part of inventors to fill the gap existing in this branch of science. That it can be filled, we are entirely satisfied.—Ed.

COAL-OIL.

Although the manufacture of gas is rapidly extending in every direction, and the fact is becoming more widely known, that in any town containing more than 1,000 inhabitants a gas company can with profit be sustained, still at present the number of gas works in operation in this country does not exceed 400, and consequently a large demand has sprung up for other means of illumination. Coal-oil from its inexpensiveness, safety, and high photometric value, occupies an important place among the illuminating agents at present in use, and has given rise to an extensive trade which cannot fail to be much increased, though at present it is somewhat depressed.

A few months ago it seemed as if this new branch of manufacture was to enrich every lucky speculator who had the good fortune to embark in it. In the mysterious secrets which were freely purchased for large sums, ardent enterprising hunters of the mighty dollar imagined they had secured the means of gaining untold wealth. Bankers and merchants, doctors of law, divinity and medicine, clergymen, artists and mechanics, ranged themselves under the banners of the brilliant delusion. Now, however, *nous avons changé tout cela*. The dream has passed away. The El Dorado has disappointed expectation. The enchanted castle refuses to yield up its concealed treasure.

Why is it that the manufacture of this useful product has not proved so lucrative as was anticipated? Why do complaints meet us from all quarters, that of the numerous Coal-Oil companies, few are paying adequate dividends, or give any immediate promise of becoming prosperous. From existing facts, is not the conclusion too hastily formed, that James Young, the inventor and patentee of processes for making Paraffine Oil, was guilty of misleading the public, when he declared, as is alleged that he gained annually $200,000 by the manufacture, and that from cannel coal, distilled according to his methods, a product of 40 per cent. of oil, and 10 per cent. of paraffine could be relied on. May we not ask the bewildered and disappointed speculators who thus argue, to pause awhile, and consider whether the fate which has overtaken some of them is not just what might have been expected, and whether similar results are not usually developed when, dazzled by golden visions, and misled by their own fervid imaginations, men embark too hastily in business operations, for which neither their habits, their experience, nor their knowledge adapt them?

No one who has very extensive acquaintance among persons interested in coal-oil operations, can fail to have observed the great differences of opinion even now prevailing with respect to the commercial value of this manufacture. Some still suppose that a fortune may be in a very short time gained by any man who, with intelligent well-directed industry, applies himself to his business; others take a more gloomy view of this new branch of commercial industry, and at first sight there appears but too much reason for their conclusions.

In October, 1850, Mr. Young, who had just taken out a Scotch patent for the production of Paraffine Oils from Coal, obtained an English patent for a similar invention, and the practical working of his methods, was so satisfactory, that the manufacture has since been extensively increased year by year. Young's claims, as a discoverer, have been controverted; and there is little doubt that the scientific facts which he applied so successfully in his process, had been long known. More than a century and a half ago, the Hon. Robert Boyle, and Dr. Clayton, in experiments on the distillates of coal, discovered among them a black oil as well as an inflammable gas. This fact was communicated to the public by the Royal Society of London, some years after its discovery. Dr. Hales, and Bishop Watson, also describe the production of volatile oils whenever coal is subjected to a red heat in close vessels. In 1805, Mr. Northern, of Leeds, in England, gave, in the *Monthly Magazine* for April, an account in which he says, that he distilled pit-coal in a retort at a red heat, and obtained among other products, a fluid of an acid taste, with a great quantity of oil. In France and Germany the scarcity and high price of animal and vegetable oils has stimulated the inventive genius of chemists, and directed their attention to the distillation of Asphalte, bitumens, and bituminous schists. Volatile oils were, in 1819, obtained by Saussure, from the Asphaltic lime-stone of Travers, in Switzerland. Reichenbach, in 1829, made great improvements in the distillation of vegetable substances, and subsequently discovered Paraffine, Naphthaline, and described Kreosote, Piccamar, and Pittakal, all of which were, by various manipulations, produced from wood tar. This ingenious practical chemist, animated with the laudable desire to extend the bounds of scientific knowledge, and to enrich his country by developing her resources, turned his attention in 1833, to the distillation of coal. His success, however, was small. In the same year Dr. Bley obtained a small quantity of oil by distilling brown coal. The inconsiderable and inadequate products obtained by these experiments is possibly attributable to two causes: First, the exact amount of heat required for the most economical production of oils, does not seem to have been accurately ascertained: and, Secondly, correct views as to the best methods for constructing the distilling apparatus, for controlling its temperature, and for separating the products, were not entertained. Hence, great improvements were needed before the manufacture could extensively flourish. Since 1841 the improvements of Rouen, Beslay, Gingembre and Hompesch, show that these two questions were attracting attention. It was reserved, however, as we have intimated, for James Young to perfect the processes of distillation, and to lay the foundation of the present extensive manufacture of Coal-Oils. That his patent is good in this country, competent persons have stated, and that his improvements have called into existence, a new branch of commerce and manufacture, experience shows. By Young's process, cannel-coal is made to yield forty per cent. of oil, and ten per cent. of paraffine. One important peculiarity in his process of distillation, is the exhibition of a low equable temperature during the whole process, and the consequent production of isomeric hydro-carbons a very different kind of product from those yielded at higher ranges of temperature. He thus practically demonstrated two important facts: First, that valuable oils could be economically produced from coal, as well as from tar, bitumens and schists, which alone had formerly been employed: Secondly, that the temperature during distillation might practically be so controlled, as that Paraffine oils should be, without waste, produced—a theory propounded by Reichenbach, but never made of practical use, until Young's experiments triumphantly established its truth. Thus Paraffine, formerly a useless, though beautiful chemical preparation, has, like so many other valuable discoveries, escaped from the laboratory of the analytical chemist, and begun to develop trade, augment wealth, aid commercial progress, and multiply the comforts of life. In Europe, paraffine works have been established in Germany, France, and Austria, as well as in England. In this country the first attempts to introduce this manufacture, were made by Abraham Gesner, on the bituminous shales of Dorchester, New Brunswick. Notwithstanding the difficulties which have impeded its progress, the enterprise has rapidly spread, and extensive manufactories are in operation at New-York, Boston, Baltimore, Cincinnati, Philadelphia, Pittsburgh, Brooklyn, and many other places. The production will doubtless continue to augment, as the demand for prime qualities now exceeds the supply. It is to be regretted that much of the oil produced in this country is impure, containing a superabundance of the heavier hydro-carbons, which, except they are removed, produce smoke and fill the apartment with unpleasant odors. The remedy for these evils will be applied, and re-distillation, or some less wasteful, and more efficient process of purification will be adopted, as competition is excited, and the manufacture progresses.

Of coal-oil lamps and burners, about 150,000 dozen are estimated to be in use, each lamp consuming about four gallons of oil during the year. The amount of oil burned averages consequently 7,200,000 gallons a year, or about 20,000 gallons every day. To make 22,750 gallons of burning oil requires 75,000 gallons of crude coal oil, at a consumption of 60,000 bushels of cannel coal. The erection of crude-oil and refining works, to make this quantity of oil each day will cost $3,000,000; but the actual outlay for the oil-works at present in operation does not fall short of $8,000,000. The value of chemicals used in the purification of coal-oil will amount to over $2,000 per day. The number of barrels used to hold coal oil will be between 500 and 600, representing the value of $1,000 and the labor of 400 men. The aggregate value of the coal-oil itself will amount to $16,000 per day, or more than $5,000,000 a year. This, too, does not include heavy oil and paraffine, the sale of which is limited and uncertain. The number of workmen employed in the several coal-oil-works in this country will reach 2,000: that of the miners engaged in mining cannel, 700 more. Besides these, a large force of men is employed in making lamps, burners, wicks, chemicals, &c. We invite correspondence, however brief, from practical men who possess accurate knowledge respecting this article. We are convinced that not a few among them are animated by principles too elevated, and motives too patriotic and disinterested to be afraid of communicating their knowledge; for without injury to themselves, they may thus aid the development of an important branch of trade, and increase the vast resources of this great commercial country.

OXYGEN TO HYDROGEN.

Why avoid me, subtle vapor?
Willing, yet afraid to rove;
Think'st that I, like a dim taper,
Might consume thee by my love?

Ev'ry happy flame I cherish
In my presence brighter glows,
Though I change, I never perish—
As each able Chemist knows.

Though a spark can not ignite thee
Yet a flame may cause thy fall;
Why defer then, why thus slight me?
Blended we may quench them all.

'Tis unkindly said that acid
And corrosive is my love;
Dearest! you shall see how placid
Will our union ever prove.

Thou relentest? Oh! what pleasure
Shall our transmigration cause—
Yes! how happy *in a measure*,
Shall we feel each summer's thaws!

THE REPLY.

Why thus tempt me, Acid-Bearer
Equally we can't unite,
I much higher soar, and rarer
Is my form, surpassing light.

If in aqueous state we're blended
Twice as much I give to thee;
As peroxyde, 'twere not mended,
Weightier would thy scruples be.

Thou art fickle, ever fleeing
To affine with others' base,
Light thou'lt make of my poor being,
And take airs before my face.

When with mutual passion burning
We consume ourselves away,
Vain regrets, alas! returning,
Soon to "walk our chalk" we pray.

'Tis then useless, all thy sighing—
Join thee to a happier mate,
In a glass tube oft-times crying
I bemoan my wretched fate.

H. M. G.

St. Catherine's, C. W., May, 1860.

An Irishman's Way of Trying the Gas.—A Greek by the name of James O'Brien, living in Mentz, undertook to clean out his well on Monday last, and found that it would be necessary for somebody to enter the well. He had read enough of gases to know that if a candle were extinguished when let into the well, it would not be exactly safe for him to go down. He therefore procured a candle, put a rope round the shoulders of a boy twelve or fourteen years of age, gave him the lighted candle and let him down. He hardly disappeared below the surface when O'Brien felt "something drop," and pulling violently at the rope brought his boy up, the candle and the boy both extinguished. By the free use of fresh water and considerable rubbing, the boy was relighted. Paddy concluded it would not be very safe for himself to go down. If Pat had "gone out" instead of the boy, it would have taken something stronger than "cowld warther" to bring him to.

Gas in the Boston City Cars.—The Metropolitan Railroad Company have introduced gas into a portion of their cars, greatly to the delight of passengers. With plenty of light and room little remains to be desired,* The age is one of progress.—*Boston Post.*

[* Except passengers.—Ed. Am. G. L. J.]

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THE
AMERICAN GAS-LIGHT JOURNAL.

ISSUED SEMI-MONTHLY.

MONDAY, JULY 2, 1860.

NOTICE.

THE ROOMS OF

THE AMERICAN GAS-LIGHT JOURNAL

ARE

OPEN AND FREE TO ALL.

Strangers and Citizens are invited to call and make themselves quite at home, at all times.

The advantages of exhausters were recently discussed in our columns, and seem just now to be attracting considerable attention. We have received several communications and inquiries relative to this subject, which will have early attention. As this method of diminishing the pressure on the retorts, and thus preventing the decomposition of much valuable gas, has but seldom been introduced, and is in use in only a few gas-works in this country, there need be no surprise if eminent practical men differ in their estimation of it. The best proof, however, of the value of exhausters is found in the accumulating testimony of those who have tried them. For instance, in a recent Report of the Philadelphia Gas-Works, it is stated "that they perform quite satisfactorily their intended function of saving a considerable quantity of gas that would be lost by leakage and carbonaceous deposit in the retorts. On several occasions, when the exhausters have been stopped for adjustment and repair, opportunities have been afforded to test their efficiency in these respects. The making and transmission of gas has proceeded without interruption on these occasions, but the yield of gas from the coals was perceptibly diminished." * * * "The pneumatic exhausters, by relieving the retorts of the great pressure of the nascent gas, have increased the yield of gas from the ton of coal nearly five per cent., and have improved its quality by diminishing the loss of the rich hydrocarbons which are usually deposited in a thick coat of carbon on the interior of the retorts, thus wasting gas and impairing the capacity of the retort. By the use of these exhausters we have been enabled to dispense with the counterweights of the gas-holders, and thus obtained much greater control over the proper regulation of the pressure in the street mains. To guide the workmen in the exercise of this control over the pressure, instruments for recording the pressure at all hours of the day and night, have been introduced at various points, and it is proposed to increase the number of these as may be required from time to time." And the explanation of this economy and saving is easy. If the gas be not allowed to pass off as soon as it is generated, but remain exposed to the high temperature of the retort, some of its most valuable carbides are decomposed, and its illuminating constituents are reduced. The greater the pressure on the retort the greater is the amount of waste; the smaller the pressure, within certain limits, the richer and more abundant the gas.

One, perhaps, of the chief obstacles to the general adoption of exhausters, is the power required to work them. In gas-works, where a steam-engine is not employed, or where water-power is not easily available, a greater outlay is often required than is justified by the results. These difficulties, however, are diminishing. In one or two of the recently invented exhausters, a much smaller amount of force is required. Consequently, the outlay in introducing, and the cost of working these valuable aids to the economical manufacture of gas are reduced. The pressure on gas companies is increasing in various ways, and renders it imperative on them to employ all the new methods for economizing which the progressive genius and the inventive skill of the age may place within their reach. In towns where the gas-works are small, and where the consumption is increasing beyond the productive capacity of existing apparatus, it is well worthy of note that the judicious use of exhausters, and other modern improvements, will greatly augment the yield of gas, and may thus, for a considerable time, postpone the necessity for a much heavier outlay in enlarging or remodelling the works.

The most interesting matter of local news is a decision of a majority of the full bench of the Supreme Court, (Judge SUTHERLAND dissenting) declaring the Act of Incorporation of the Metropolitan Gas-Light Company void, by reason of the Governor's signature having been affixed to it, after the adjournment of the Legislature. We called the Governor's attention to this point when the case first came before the Courts, last summer, and he considered the precedents sufficient to justify his official act, it having been the custom from time almost immemorial to sign the bills at leisure. The case has since been argued before the Court of Appeals, and we have just learned that the decision of the Supreme Court has been reversed, and the Act of Incorporation declared legal. Had it been otherwise, some two hundred laws, including many of great importance, would lie dead upon the Statute Books, among them, the Act authorising the Manhattan Gas-Light Company to increase its capital; the Act Incorporating the Cohes, N. Y., Water Company; and others.

Owing to the extreme dilatoriness of some of the gas officers to return our tables corrected, their publication is regretfully deferred until our next issue. We are sorry for this, because it interferes with our plan of publishing the Tables in the first number of the new year. Will not these gentlemen forward their statistics at once, upon the blanks we have furnished them?

A friend, in London, has sent us a valuable statistical table of some of the British Gas-Light Companies, which will appear in due season.

The Water-Works Tables are also in hand, and as soon as they are completed, they shall be forthcoming.

The proposals for gas castings, for the city, are not ready for publication in this number, the officials having been engaged with the Japanese Ambassadors for the past fortnight. The untiring efforts of the Aldermen and their subordinates, to consume the enormous quantity of corned beef and bad liquor appropriated to the use of their illustrious guests, have disabled them from their regular duties, but on the departure of the NIAGARA from New York the yellow kids will be removed from the municipal paws, which will probably be then enabled to attend to business once more. We hope the Prince of Wales will be spared the "hospitalities" of the New York Aldermen, should he favor us with a visit. They are fearful to contemplate, with or without the kids.

Mr. H. K. SYMMES' Patent Retort Mouths, are advertised and illustrated in this number, and while the improvements in Clay Retorts are interesting the entire gas fraternity, it would be well for gas engineers to examine into the merits of Mr. SYMMES' invention.

We welcome to-day, to our advertising columns, two of the best Western manufacturers of Gas and Water Apparatus. Messrs. S. S. ASHCRAFT and GEO. STACEY, of Cincinnati, O. The columns and other castings and the gasholders of the Cincinnati Gas-Light Company, made respectively by Mr. ASHCRAFT and Mr. STACEY, are models in their line of business. These gentlemen have been known to us a long time by name, but now they are with us in person, and we hope to introduce them to a good business from the readers of the JOURNAL.

The promoters of the proposed opposition Gas Works in New Haven, Conn., failed to make a case before the Committee, and after a patient hearing of nearly three weeks, by counsel, and a cloud of witnesses, they received the unanimous permission of the Committee *to withdraw*, while the petition of the Company, for an increase of their capital to half a million dollars, was granted, the Company being restricted to a charge of $3 per 1,000 cubic feet, after January 17, 1861. As the Company had already decided to reduce to that, on the 1st Sept., 1860, it was not a hard condition to accept.

From Boston we have received two pamphlets, the first containing "Reports of the Majority and Minority of the Committe on Paving on the Shawmut Gas-Light Company, and the Remonstrances against the same made to the Board of Aldermen on Monday, May 21, 1860, being City documents, Nos. 41 and 42." The second purports to be a "Memorial of the Remonstrants, Residents, and Owners of Estates in Ward XI. against the establishment of a new Gas-Light Company, at the south end of the city of Boston!" These two papers contain an account of the rise, progress, and decadence of the project referred to. Those of our readers who are interested may obtain from the perusal of these documents a view of the circumstances which eventuated in the rescission of the powers granted in August, 1854, to the Suffolk and Shawmut United Gas Companies.

The arrival of the GREAT EASTERN steamship, in our waters, on the 28th ult., is a subject of national interest and congratulation, and while we regard with feelings of admiration, as well the magnificent structure herself, as the gigantic enterprise of British capitalists, which gave her being, we are not a little proud that she is safely moored at one of our ordinary wharves, on the bosom of the Hudson river, within the very heart, we may say, of the WESTERN METROPOLIS.

THE WATER-GAS WAR IN PHILADELPHIA.

A spirited, and, we regret to say, rather personal correspondence has been going on for some weeks, in Philadelphia, between JOHN C. CRESSON, Esq., Chief Engineer of the Philadelphia Gas Works, on the one part, and Messrs. HENRY C. CAREY, ABRAHAM HART and MARMADUKE MOORE, representing the Water-Gas interest, on the other part. With the personalities involved in the controversy we have nothing to do, but we cannot fail to regret that gentlemen occupying so prominent a position in that community, should feel compelled to resort to the public prints, either to prefer or resent their grievances. This much, however, we can say, that the

Committee of the Philadelphia Gas Works have, in our view of the facts, as presented by the letters on both sides, dealt very unfairly by the Committee of the Water-Gas Company, in not permitting the most unrestricted experiments of their invention. The mere fact that absolute power is conferred upon the Committee of the Gas Works, should make them generous in its exercise, and any attempt at a contrary course will meet, naturally, with pertinacious resistance, strengthened by public sympathy. Various schemes for private gas works have been introduced from time to time, in this city, and it has become necessary, for personal convenience, to ask some favors of, and take certain liberties with our gas companies, especially with the New York Gas-Light Company, who have, on all occasions, stretched a point to facilitate these experiments. The companies have lost nothing by this courtesy; on the contrary, they have made friends, where an opposite policy would have awakened feelings of hostility.

As we have already said, the position of the gentlemen involved in this controversy, entitles them to the highest respect and deference, mutually, and we hope the Committee of the Gas Works will not be so unwise as to attempt to thwart the plans of parties interested in the Sanders' Water-Gas enterprise, which, if practicable, will succeed in spite of their opposition, and if impracticable, will fall of its own weakness.

OUR PROGRAMME FOR 1860-'61.

From and after this date, THE AMERICAN GAS-LIGHT JOURNAL is a semi-monthly paper. The first number of its second year is issued this day; the second number will appear on the 15th inst., and so on throughout the year.

Our earnest desire and firm intention are, to make THE AMERICAN GAS-LIGHT JOURNAL *the very best and cheapest paper of its class in the world.* To accomplish this it must circulate among the masses; and, we believe, the day is not far distant, when it will be in the hands of thousands, to whom the blessings of good light, pure water, and efficient sanitary protection are now denied. Ignore the fact as we may, it is to these important classes that all great enterprises must look for thorough development and successful issues.

In order to command this extensive circulation, and to make known throughout the length and breadth of this vast Continent what is being done in the procurement of good Light and pure Water, we have already supplied the Presidential post-offices with thousands of copies of the AMERICAN GAS-LIGHT JOURNAL. We begin with this number to *supply the balance of the thirty thousand post-offices in this country with copies of the* JOURNAL, *a certain number each month*, UNTIL THE WHOLE AMERICAN UNION IS AROUSED TO THE IMPORTANCE OF OUR ENTERPRISE. *The benefit of this enormous circulation to our advertisers cannot fail to be appreciated*, as the total number thus circulated, allowing an average of one hundred to each post-office, will not probably fall short when the distribution shall have been completed, of THREE MILLIONS OF COPIES.

TO OUR FRIENDS IN GREAT BRITAIN.

The AMERICAN GAS-LIGHT JOURNAL will be issued hereafter on the 1st and 15th of every month. The subscription price is also reduced to TWELVE SHILLINGS sterling per annum, payable in all cases in advance. Post-office orders can be remitted to our bankers in London, Messrs. WHEATLEY, STARR & Co., No. 156 Cheapside, to whom please also send the full address to which the JOURNAL is to be sent. We have received payment for several subscriptions in Great Britain, for which we cannot send the JOURNAL, because the addresses were not given.

TO SUBSCRIBERS AND ADVERTISERS.

Our Subscribers will remit, on receipt of this number, for as many copies of the JOURNAL as they wish, during the coming year. The greater our circulation, the greater are our means of improving the JOURNAL; and we anticipate a large increase over the circulation of the past year, liberal as that was.

Advertisers will be charged for the double issue but a slight advance upon the previous rates, and they will please take notice of our Programme for 1860-'61, in this column.

TO THE BRITISH WATER COMPANIES.

We are now devoting our energies to procuring complete and correct information respecting the Water-Works of the World. In doing this, we shall not be content with the mere list of names and amount of their respective capitals. We wish to know all important details, the extent of the works, their cost, revenues, expenses, mode of charge, population, and number of water-takers. The American Water Companies have responded promptly to our questions, and sent us piles of printed reports, of which we hope to present tables in the course of July or August. We hope that European, and especially the British Water Companies, will do the same on receipt of this request. Several of them have already done so of their own volition, for which we thank them. The papers on Water-Supply which have appeared from time to time in this JOURNAL, will be continued regularly hereafter. Please address all letters and pamphlets to the AMERICAN GAS-LIGHT JOURNAL, New-York City, and they will be sure to find us.

SLATE PURIFIERS.—Mr. G. Walcott, of London, suggests to the *Jour. of Gas-Lighting*, that slate might be used advantageously for the cases of purifiers instead of cast-iron Mr. Walcott says, that in North Wales slate-cased purifiers will cost less than cast-iron-cased purifiers, but whether he used them or not he does not state; he merely suggests the matter to gas-makers. We extend the suggestion to gas-companies in and near our slate districts and if any try it, let them tell us what they think of it.

THE MANUFACTURE OF GAS IN PHILADELPHIA.—The committee who have been inquiring into the subject of a change in the material used for the manufacture of gas at the Philadelphi Gas Works, have reported that they have examined the details and apparatus for the manufacture of three kinds: from bituminous coal, from distillation of wood, and from distillation of rosin, in conjunction with the vapor operator. They pronounce them all of excellent quality, and say that the only choice is in economy. That produced from wood is the cheapest, and that from rosin the dearest. They report that no change could be advantageously made by the Company.

PORTABLE GAS IN VENICE.—We hear from Venice that the gas-works for portablegas, established in that city by Mr. N. Accini, from Genoa, with the assistance of Messrs. Breda, have just begun operations to the general satisfaction. These works have already obtained a number of subscribers, which secures to them the supply of 3000 burners, and this figure will be, to all appearance, doubled before long.

The construction of the gas-works for the portable gas in Venice could not be put under way till after the termination of the last war; indeed, when it is taken into consideration what little time has elapsed since that period, one cannot help acknowledging that the greatest activity must have been required to bring about this result in so short a time.—*Le Journal de l'Eclairage au Gaz.*

SUBMARINE LANTERN.—An interesting trial with a new submarine lantern of peculiar construction has recently been made at the Portsmouth navy yard, and the result elicited high commendation. The lantern was first lowered down to the bottom of the river, then separate tests were made as to the exact distance rays of light could be seen from the surface. Also the distance light could be thrown, so as to distinguish accurately distinct objects. An oar lowered to the depth of six feet from the bottom, the lantern being sunk four feet, was so clearly seen that the grain of the wood was distinctly visible. The rays of the light were visible upon the surface of the river when the lantern was sunk to a depth of twelve feet. These experiments were made in thick, muddy water, and it is stated that, had it not been that the board of examiners in attendance were satisfied as to the principles involved, the lantern would have been kept burning under the water for three hours. The same principles which govern at the depth of sixteen feet will, it is claimed, prove equally successful at the depth of ninety or one hundred feet.

WATER FOR THE CITIES OF ROXBURY AND CHARLESTOWN, MASS.—A communication, accompanied by a petition from the Mayor of Roxbury, and a communication from the Mayor of Charlestown, were sent to the Legislature of Massachusetts, relative to the supplying of those cities with Cochituate water. The papers were referred to the Committee on Water, and sent down for concurrence.

COAL IN MAINE.—All along the south side of the Aroostook, and stretching southward of Mars Hill, over an area of 120 to 150 square miles; and north of the Aroostok, over an undefined area as far as Temiscouata Lake, are seen, according to the Geologists, "all the marked characteristics of the regular anthracite coal formation." The rocks certainly belong to that formation, and are frequently glazed with carbon, but no bed of coal was discoverable. This is not by any means a decisive or even discouraging circumstance; when it is remembered how unfavorable to such discoveries is the position of the surveyor whilst passing, amidst numberless privations and difficulties, through an almost impracticable and uninhabited wilderness. Accident will probably bring to light much that must inevitably escape the scrutiny of the most practised observer.

As the "regular coal series" is mentioned in conjunction with "the old red sandstone, resting upon the grauwacke," we should infer that the coal, if any, belongs precisely to the same age as the great central coal fields of the United States, whether bituminous or modified in the form of anthracite.

Shales, containing vegetable impressions such as usually characterize the coal measures, have been observed at Waterville and certain points in this State; but the geologist hesitates to vouch for the absolute existence of coal. These supposed impressions, indicative of the coal measures, have been decided by Prof. Hubbard and admitted by Dr. Jackson, to be not vegetables, but true annellides, such as characterize the slates which Murchisoe has included in the Cambrian series.

TIDE WATER AS A MOTIVE POWER.—Dr. Seguin, of Paris, has proposed a novel and ingenious application of the tides as a motive power, applicable to machinery and agriculture. He proposes to construct, at the water side, two monstrous basins—one being furnished with gates, permitting the entry of tide water, but preventing its exit—the other, having gates, permitting the exit of water, but opposing its entrance from the tide. By this means, the first basin would be filled with water at high tide, and the other would be completely emptied to the level of ebb tide. A canal or race being constructed between the two basins, would thus become the seat of a continuous current in one direction. By this means the alternating motion of the water will be converted into a continuous action, calm, as easily regulated and susceptible of the same applications as natural water-courses. The only question to be settled, in considering the applicability of this scheme, is its economy; and upon this point there might possibly be some doubt. Dr. Seguin, it is stated, proposes especially to apply this method to the purification of the Thames. This would seem to be perpetual motion in a liquified state.

PERPETUAL ICE.—A 'singular phenomenon' is said to have been discovered in the town of Austerlitz, Columbia county. On the premises of Mr. A. Heath there is a well in which ice has continued to form all the Spring, and continues at the present time. The stones at the sides of the well are coated with ice from a point about 8 feet below the surface of the ground down to the water, some 7 feet. Large pieces of floating ice are also brought up with the water. They need one of Walton's Anti-Freezers up here.

HAGERSTOWN, MD.—Rosin gas works built by the Maryland Portable Gas Company. Has no public lamps because the corporate authorities have not the power to levy a tax to meet such an expenditure. They expect, however, to get such power from the next Legislature. Our gas works are rented to the Maryland Portable Gas-Light Company at Baltimore, who own 2-5ths of the works, for ten years. The first five years they are to pay $750 per annum, and the second five years $900 per annum, or 6 per cent. on the capital, which is $15,000.

NORWICH, CT.—We stated in our last issue that these gas works were built by Messrs. George Dwight & Co. of Springfield, Mass., as reported to us by the Secretary of the Company. It appears now that these works were built by Chapin, Tredwell & Co., of Springfield, Mass., who have erected also several others in that and other States.

NEWBERN, N. C.—Works built by Mr. Stephen Scammon of New York, and although small, are considered among the best rosin works in the country. They commenced lighting up Sept. 15, 1859, and report having declared a dividend of 8 per cent. out of the earnings for eight months, leaving a surplus in hand of 3 per cent. They have over 5 miles street mains, from 1 to 6 inch, 208 services, 200 meters set, and 56 public lamps. They charge but $5.40 per 1000 feet for the gas (Rosin), and now, who says that cheap gas is not profitable? A jolly little company is the Newbern; good luck to them.

NYACK, N. Y.—The *Rockland County Journal* (a cleverly edited weekly) of June 16, contains an interesting account of the rise and progress of these gas works, for which we regret we have not room. These works were built by Messrs. E. V. Haughwout & Co., the extensive gas-fitters and contractors of this city; and although on a small scale, and in a small town, are a good investment in view of the steady and certain increase before them. We shall allude to them more fully hereafter.

GARDINER, ME.—But 43,300 capital in all. Works built by Lord & Burleigh, of Somersworth, and give satisfaction. Use Samuel Downs' and Glover's meters; cement joints; Pictou coal at $5.50 per 2,000 lbs., delivered at works. Cubic feet of gas made in 1859 was 1,074,400.

CORRESPONDENCE.

CLAY RETORTS.

OHIO, June 9, 1860.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

The well written articles in your JOURNAL, under the head of "Practical Management of Gas-Works," are attracting deserved attention in the West, and must prove of real value to the many small gas-works throughout our country, which owing to the small amount of capital invested in each, must necessarily be left in charge of comparatively inexperienced gas superintendents, who find much to read, learn, and inwardly digest, from your pages.

These articles of yours strongly advocate the adoption of clay retorts; but it strikes me they never give the proper data for comparison of results between clay and iron retorts.

Three main points have to be observed: 1st, The amount of gas produced, per pound of coal carbonized; 2nd, The amount of gas produced in the "*life-time*" or duration of a retort; and, 3d, The amount of gas produced per retort, each month, working in the usual practical manner,—that is, with light charges of coal during the moonlight nights, and heavy charges during the nights without moonlight.

It is not sufficient to state that a clay retort will last two or three years, to prove that it is superior to an iron retort, which lasts only one, or one and-a-half years. For, by working an iron retort at low heats and "six hour charges," it may be made to last from two to three years, as well as the clay retort. The result of this, however, will be a loss in the yield of gas per pound of coal, and a loss in the monthly production of gas per retort, and the unprofitable employment of a greater number of retorts to produce a given amount of gas. In making statements, too, for comparison, it is requisite to state the size of retort used; for, when in Cincinnati, the other day, I saw a retort in operation which produced thirty-six thousand (36,000) feet of gas per diem! It was a monster, to be sure, being a "through" retort, 19 feet long, and 4½ feet wide, with a return flue on top, which converted the tar into gas, and produced excellent results. Other sizes of iron retorts, as well as clay retorts, are also being introduced at the Cincinnati Gas-Works, and I think you mistake in saying that Mr. Jeffrey is one of the advocates of iron retorts; as Scotland, the country from which he comes, had established by practice, at least twenty-five years ago, that the clay retort was the best—facilities for the obtaining of clay and iron retorts being equal. Until very lately, clay retorts have not been manufactured in the West, and are still difficult to obtain, as their transportation is a serious affair.

Much of the duration and usefulness of a retort depends upon the setting, and in this particular we are fortunate in finding at the West a species of firestone which resists the action of intense heat better than any fire bricks or tiles manufactured. It is a soft coarse sandstone, and can be readily sawed into slabs or lumps of any useful size. *En passant*, I may add to your record of gas curiosities of the same class as the soapstone retorts of California, that sandstone retorts were made and used in the Louisville, Ky., Gas-Works, nineteen years ago, with considerable success. The engineer, being unable to procure clay retorts, tried the stone retorts as a substitute. They were made of large slabs of stone, dove-tailed at the joints, and put together with fire-clay, and might be used to advantage by gas-works in the neighborhoods where this kind of stone is found.

About the same time were introduced in the West what Mr. Cresson calls the "open setting"—what your articles call a "modification" of the setting introduced in the Philadelphia Gas-Works; only it was the forerunner by at least a dozen years, of the plan adopted at Philadelphia, and is still used with success *unmodified*.

Excuse this gossip from

A WESTERN MAN.

THE PEMBERTON MILLS CATASTROPHE.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

In the last number of your JOURNAL (June 1st.) reference is made to the fire at the ruins of the Pemberton Mills being caused by the gas-burners. I should not notice the communication were it not that, uncontradicted, it might convey a wrong impression to parties using or seeking to use gas as an illuminator.

The Pemberton Mills fell at 5 o'clock, P. M., and, *of course*, the destruction of the building carried with it the service-pipes for gas, and severed their communications. This, *of itself*, would have caused any burner to be immediately extinguished, and prove a protection against fire from the cause mentioned in your article. To guard against fire from gas, should an accident of any kind occur at the mills, each mill is provided with a valve, which is connected with the "mains," and away from the buildings. I was on the premises *five* minutes after the building fell, and caused the valve to be closed, which at once cut off any flow of gas into the premises. The fire broke out at about 9½ o'clock. (4½ hours after the falling of the building) immediately in the vicinity of where I was at the time at work, and the evidence before the jury (a copy of which I send you,) goes to show, *beyond a doubt*, that it was a *spirit lamp*.

I will forward you in a short time, an authentic publication, containing all the evidence, together with drawings, &c., connected with the Pemberton Mill accident.

Very truly, yours,

GEO. D. CABOT,
Agent Lawrence Gas Co.

P. S.—The following is the evidence of four witnesses, who were examined before the Coroner, at the inquest:

John Pender: I was present when the fire took place; persons were picking round among the ruins, looking after dead persons, where a large amount of cotton was exposed; said I, "For God's sake, look out for fire, with your lanterns;" there were four or five persons there, with two lanterns; then, soon after, I saw the fire blaze up, and the people came out; the fire took from the loose cotton hanging around the carding machines; heard nothing like breaking of glass; have heard no individual say 'he saw a lantern broken'; the lantern looked like a common oil lantern.—*Boston Journal*, Morn. Ed., Jan. 13.

Richard H. Plummer: We found some dead bodies there, and there were some persons there endeavoring to get out another body; two persons were holding lanterns for these men; one of the lanterns dropped; can't say whether it broke, but fire sprang up from some loose cotton; I called for water, but found none; took off my coat to cover the fire, and smother it, but it had got so large that I could not.—*Ibid.*

D. F. Robinson: Was at the fire; confirmed the evidence of Mr. Pender, that the fire caught from a lantern dropped among the cotton, by one of the workmen.—*Boston Journal*, Sat. Morn., Jan. 14, 1860.

John Crawford: I know how the fire took; it was between nine and ten o'clock; I was there helping to assist; my daughter was in the ruins, and I was looking for her; I got part way into the weaving room, and was stopped by ruins; at the time of the fire, I was on the ruins, when a young man came up and asked me to hold a lantern; I held it for about ten minutes, when somebody asked for it, took it, and went down; he came back and said there was a deep hole there which went down to the card-room; he went down again, and I said, "For God's sake, be careful of the lantern;" he went down further, and I said, "For God's sake, don't go down there with that light;" he went, however, and in going down, struck the lantern on some timber on the right hand side; when he struck the lantern, it broke, and immediately fell; I shouted "fire," and stooped down to pull him out; he was on fire himself, and the fire was spreading like gunpowder; I ran for our machine, and we got it out and went to work; the fire took near the centre of the building, near the duck factory; the lantern was a common square one, with metallic top, bottom and corners, in which four squares of glass were set; it was not protected by the usual guard around that style of lantern; it is carried by a very large flat bail, to hang upon the arm; a small square lamp of metal, with a single burner, supplied with burning fluid, rested upon the bottom of the lantern, and gave the light; I had the lantern in my hand, and knew it was a fluid lamp.—*Boston Journal*, Tuesday, Jan., 17.

ON BURNING FLUID.

NEW YORK, June 19, 1860.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

I was much gratified to observe by your issue of the 1st instant, that you had at length resolved to throw off the last vestige of exclusiveness, and that thence forth, in admitting the subject of Burning Fluids into your columns, you proposed to make your JOURNAL what it professed to be but never was, viz., the organ of "Light" *par excellence*, and in the broadest and widest sense of the term.

I had previously observed, with pleasure, that a portion of your columns had been devoted to the Coal-Oil interest, which is already assuming such gigantic proportions. It only required this last stroke of policy on your part, to complete your programme, and render the JOURNAL as eminently useful to all classes of the community as it is deservedly popular with the gas-lighting interest.

Perhaps there is no better way of appreciating the importance of the subject than by taking a rapid glance at the movement and value of the naval stores received at this port alone, for the year 1859.

In that year there was received at the port of New York, as follows:—

Crude Turpentine	96,654	Bbls.
Spirits "	161,110	"
Rosin	653,428	"
Tar	54,092	"

The estimated value of the same, sums up as follows:—

Crude Turpentine, say	$3 25 per bbl.		$314,125
Spirits "	" 0 46 per gall.		2,964,424
Rosin	" 1 60 per bbl.		1,045,434
Tar	" 1 00 "		54,092
Total			$4,378,125

In all, nearly four and a half millions of dollars, to say nothing of the local consumption of these articles in New Orleans, Baltimore, Philadelphia and Boston, and other parts of the United States. It has been estimated by competent parties that the annual consumption of camphene (rectified spirits of turpentine,) throughout the United States, amounts to about 6,000,000 gallons; and, of burding fluid (a mixture of camphene and alcohol,) to some 24,000,000 galls. more per annum. The united values of these two products, at 45 cents per gallon, would thus swell up to some $13,000,000 per annum. In the city of New York alone, the estimated amount of Camphene sold annually, is 4,000,000 gallons, and of Burning Fluid, 8,000,000 gallons, representing a total value of nearly five and a half million of dollars.

Our supplies are mainly drawn from North and South Carolina, Georgia, and Southern Virginia, whilst Alabama, Florida, and Louisiana, also contribute more or less. It is thus clear, that this much neglected interest is one of no small magnitude, and that notwithstanding all that has been said or written against their use since their first introduction into this country (the former as far back as the year 1833, and the latter in 1837,) their manufacture has steadily increased in importance, year by year.

LUX.

LIGHTNING IN THE GAS-PIPES.

NEWTON, MASS., June 20, 1860.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

During a thunder storm, some three weeks since, the lightning struck the spire rod of the Unitarian Church in this place, following it to the conductor, thence on the tin conductor to the ground. Tearing up the earth, it passed through the wall into the cellar, where it came in contact with the gas-pipe, which it followed into the ground. I was writing in my office, a short distance from the church, at the time the lightning struck the gas-pipe, and was using the gas on account of the shaded position of the room. At the instant of the shock (which was a powerful one,) the gas-pipes gave a hissing sound, like melting iron, and the burning gas streamed up to an unusual height for a moment, and then a blueish flame, some three inches high was visible above the white flame, for some three or four minutes. Being unable to discover any leak in the pipes, I would like to be informed if the electric fluid could reach the interior of the pipes without leaving a place where gas would escape.

H. K. S.

RELATIVE COST OF ILLUMINATION.

LAFAYETTE, IND., June 8, 1860.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

Dr. Hayes' supposition was correct with respect to the temperature of the room in which the photometric results were obtained. His suggestion as to the temperature of the body undergoing combustion is a valuable and interesting one, and one which I should like to see carried out in a particular series of experiments, which would be apt to give results having a practical bearing, as in the case of Parker's hot oil lamp. The subject forced itself upon my notice while experimenting with lard oil in the Cornelius lamp; but I could not very well test the temperature of the oil while burning without spoiling my lamp, and the object in view was to ascertain the value of the materials as they are employed by the public in rooms comfortably heated. I hope Dr. Hayes will pursue this point, as an article from his pen upon the subject would have especial value. I do not understand to what Dr. H. alludes when he mentions solids consumed for affording light in the Western States not commonly found in the Eastern markets. Table I. embraces all of the substances employed in this locality, with the exception of the vapor of burning fluid, consumed in a peculiar lamp, of which there are two or three in use in Lafayette. An accident (not attended with serious results), in which the ignited burning fluid from the lamp was projected upon a boy employed by the agent in this place, injured the sale of these lamps.

The reason that table I. does not contain solid lard as well as lard oil is, that at the time of performing my experiments a good article of lard for burning was not to be had here, and results from an inferior article would have been worse than worthless. In making lard for burning at the pork-packing establishments, the available offal of the hog is steamed for the lard it contains. I have supposed that this is sometimes so carried on as to introduce organic impurities into the grease, which injure its burning qualities by producing greater incrustation than usual upon the wick. I have seen an incrustation of this kind removed from my Cornelius lamp which looked like coke, and remained a coherent ring.

If I happen on anything interesting in the line of your Journal, it will not only be a pleasure, but I shall esteem it as a privilege, to publish it in your paper.

Yours respectfully, CHARLES M. WETHERILL.

GAS-LIGHTING IN TURKEY.

U. S. LEGATION, CONSTANTINOPLE,
March 10, 1860.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

I have received a number of the AMERICAN GAS-LIGHT JOURNAL of the 1st November last, and perceive from a notice which it contained that you desire to learn the condition of the manufacture and use of gas in this capital.

Permit me to inform you that, until a few years since, gas was wholly unknown here. The Sultan introduced its use in his palace of Dolma-baktchi, and established Gas Works near it for that purpose. As a favor, H. I. M. has more recently, ordered that Pera and Gelata should be furnished with gas from his own works, and pipes are being laid in their streets for this purpose, at a cost of P. 75 (the dollar at P. 26) per 1000 feet. The apparatus, sold to such private houses as are disposed to use gas, is extremely dear, and mine, for the entrance and kitchen cost me some $50.

I have been asked by Turkish friends in office, whether apparatus could not be procured from the United States for the manufacture, etc., of gas for private houses in Constantinople proper—say to burn 10, 15 or 20 lights. Some of the Pasha's houses are very large, and contain 100 or more inmates, and such apparatus would suit them well.

I would be pleased to hear from you on this subject, giving prices, number of lights, etc.; in fact, all the information requisite to enable them to give orders for similar apparatus. There are persons here capable of putting them up.

Hoping that you will favor me with a reply, I remain

Dear Sir, truly yours,

JOHN P. BROWN.

THE PROPOSED GAS CONGRESS.

OFFICE OF THE NEWTON AND WATERTOWN GAS LIGHT CO., June 18, 1860.

To the Editor of the AMERICAN GAS-LIGHT JOURNAL:

As the "Majority rule" is to fix the time for the assembling of the proposed Congress of Gas Officers, I will state that, in this vicinity, we have more leisure time in August than later in the season. H. K. S.

REPORTS OF GAS-LIGHT COMPANIES.

ALTOONA, PA., GAS AND WATER CO.

The first Annual Report of this company, dated May 5, 1860, is before us, and as it contains some matters of general interest, we present it as a creditable and intelligent statement of affairs:

In May, 1855, an Act was passed by the Legislature of Pennsylvania authorizing the borough of Altoona to construct works for the purpose of supplying the town with Water, and in April, 1857, an Act of Incorporation for a Gas Company was obtained. But from various causes no action was taken towards availing of these privileges.

At the session of 1858–59, a supplement to the latter Act passed the Legislature, authorizing the incorporation of a new company, to be called the ALTOONA GAS AND WATER COMPANY, upon which the powers and privileges contained in both the previous Acts were conferred. The sum of $40,000 was named as the amount of capital Stock, with the privilege of increasing it to $60,000.

Soon after the passage of this Act, a Company was organized, and an active canvass resulted in procuring subscriptions of stock to the amount of $29,500. Although this sum was not sufficient to complete the projected works, yet, in anticipation of an increased subscription, when the certainty of proceeding with the construction should be established, and in accordance with the wishes of the Stockholders, it was determined to commence operations.

A suitable piece of ground having been procured, conveniently situated between Virginia street and the Pennsylvania Railroad, in the north-eastern part of the town, the construction of the gas works was commenced in August, 1859. Another lot was soon after obtained at the head of Annie street, of proper elevation for the location of the water reservoir, and the work at both points, together with the laying of pipes, was vigorously prosecuted.

On the 16th of December, 1859, within four months, both Gas and Water were furnished to the citizens. From that date to the present time the supply has continued with a steadily increasing demand, and without a single interruption or drawback of any kind.

Every portion of the work has been constructed of the best materials, and by competent mechanics, in a plain but substantial manner, and at cash prices, under the immediate direction of a well-qualified Superintendent, assisted by the members of the Board.

The works may be briefly described as follows: On lot No. 1, a neat brick building containing two rooms, each 30 feet square, for retorts and purifiers, and two of 20 × 24 feet each for office and workshop; a frame coal shed 24 × 30 feet; a frame lime-house 12 × 15 feet; and a gasometer 40 feet in diameter by 16 feet deep, whose capacity is about 20,000 cubic feet. Two benches of three retorts each have been constructed, and the foundations prepared for a third bench. Each bench is capable of supplying 10,000 cubic feet of gas in 24 hours, which is more than will be required for some time.

The lot upon which the reservoir for water is constructed contains about one acre, and is protected by a substantial fence. This reservoir is 50 feet in diameter, 12 feet in depth, and contains 176,000 gallons. The elevation of the bottom is 72 feet above the railroad track at the crossing of Annie Street, which gives sufficient head to supply all parts of the borough, with the exception of a few buildings near the Catholic Church.

The Pennsylvania Railroad Company have a reservoir near Pottsgrove's Mill, on the Brush Mountain, about 125 feet above the level of their tracks at Altoona, from which pipes are laid to the workshop, a distance of nearly three miles. The railroad Company have, with much liberality, allowed their main pipe to be extended to the reservoir of the Water Company, which is kept constantly full by the surplus water not required for railroad purposes. In return for this privilege, the railroad company have the benefit of a large reservoir of water close at hand, in the contingency of fire, or of any derangement in the line of pipes from their own reservoir.

PIPE LAID.

For Gas,	2,048	feet	6-inch,
	7,970	"	4 "
	5,650	"	3 "
	861	"	2 "
	264	"	1¼ "
Total,	16,873		
For Water,	1,186	"	8 "
	1,794	"	6 "
	10,102	"	4 "
	1,329	"	3 "
	434	"	2 "
Total,	14,845		

Twenty fire plugs have been put in, as a remuneration for the cost of which, in connection with the use of the water, the Borough Authorities have agreed to pay a moderate annual rent.

SUBSCRIPTIONS.

Shares subscribed for, 1,481, at $20 per share		$29,620 00
Upon which has been paid the sum of	$28,700	
Leaving a balance due of	920	
		$29,620 00

CONSTRUCTION.

For Gas—		
Gasometers	$4,973 84	
Gas pipes and casks	11,298 27	
Gas Meters	1,599 66	
Retorts, Purifiers, etc	3,550 60	
Service pipes	1,578 15	$23,000 52
For Water—		
Fire Plugs	880 00	
Reservoir	2,685 54	
Water Pipes, Cocks, Valves, etc	12,493 10	16,058 64
For both jointly—		
Land	1,500 00	
Buildings	5,571 85	
Superintendence	661 60	
Stationary and Printing	92 75	
Incidentals	445 75	8,271 95
		$47,331 11

HOW OBTAINED.

Of which were—

Received from subscriptions	$28,700 00	
" " loan	10,000 00	
Due from subscribers	920 00	
Balance to be provided	7,711 11	$47,331 11

RECEIPTS.

The receipts from December 16, 1859, to April 16, 1860, a period of four months, are as follows:

For Gas	$1,576 47	
" Water	269 49	
" Service Pipe	76 12	
" Meter Rents	48 17	
" Making attachments of Water Pipe	63 50	$2,033 75

EXPENSES.

The expenses during the same time have been:

For Coal	$285 70	
" Labor	231 10	
" Lime	17 19	
" Superintendence	463 40	997 39
Net Receipts		$1,036 36

Deducting the amounts received for service pipes and attachments, we have the proper net revenue from gas and water, $896 74.

Allowing the same rate for the remaining eight months, the yearly revenue would be $2,690 22, or very nearly 6 per cent. on the total cost.

We have, however, reliable data for anticipating a large increase in the receipts, without a corresponding increase in the expenses, which will remain very nearly the same, with the exception of the item of coal.

METERS IN USE.

On the 16th of January, 1860, there were in use 100 meters.
" " " February, " " " 111 "
" " " March, " " " 124 "
" " " April, " " " 133 "

The present number of water consumers is 65.

The increase in the consumption of both gas and water has been regular from the date at which the works were put in operation, and will continue to be so for some time to come.

Although the want of capital in this town tends to delay improvements that are not matters of absolute necessity, yet the advantages of good water and light are so apparent to all, that they will be embraced as rapidly as the owners of property are enabled to meet the expense of putting up fixtures and making attachments.

The Pennsylvania Railroad Company are now preparing to light their passenger trains with gas, and are constructing the proper apparatus for filling the receivers at this place. The large amount of gas that will be required for this purpose, can be furnished from our works without any additional expense beyond the additional quantity of coal consumed. The receipts from this source, in addition to what will be derived from the increase in the number of individual consumers of gas and water will be nearly all clear revenue.

As the loan of $10,000 bears interest at 6 per cent., all the profits over that rate of interest will be apportioned to a capital of $37,331. Upon this amount there is very little doubt but that the net profits within a year will warrant a dividend of 8 to 9 per cent.

We may briefly sum up by stating that the works are now completed and in successful operation, with a net revenue, during the first four months, equal to 6 per cent. per annum, and with the certainty of increased receipts, with very little addition to the expenses.

The construction of these works has not been a matter of speculation. All the means raised thus far have been contributed by parties either owning property in the town, or residing in it and interested in its welfare.

Nothing is now wanting to insure the fullest success to the enterprise but the disposal of such an amount of stock as will cover the indebtedness of the Company.

In view of the large addition to the comfort of the citizens, and the increased security against damage by fire, resulting from the completion of these works, there is a strong claim upon those owners of property in the borough who have not yet taken stock, to come forward and assist in sustaining an improvement by which they are so much benefitted.

Many of those who have already taken an interest, may be able to add to their investments. It is very desirable that the debt should be liquidated speedily, and without resort to loans.

In conclusion, the Board would embrace this opportunity of expressing their thanks to Mr. S. D. McCalla for the assistance rendered by him in the construction of the tank and reservoir, and to Mr. Thomas S. Francis, Superintendent, for the skill and energy displayed by him in the planning and prosecution of the work.

W. H. WILSON, *President*,

BENJAMIN F. ROSE, *Treas. and Sec.*

ANSWERS TO CORRESPONDENTS.

J. L., of Pa.—*The decision to which you refer is that of a majority of the full bench of Supreme Court Judges—there is yet an appeal to the Court of Appeals. It has been supposed hitherto that the Governor's signature to bills, after the adjournment of the Legislature, was legal. You will find a report of the case in our columns.*

Booth, of Mo.—*Mr. Young's patents will be defended, and infringements prosecuted in this country by Benedict & Boardman, Counsellors of this city. Why are not Mr. Young's patents as valid as those of any citizen? We suspect you are under some misapprehension in this matter, and advise you to be cautious.*

O. L. F. of C. W.—*You can forward a specimen of the coals in which you are interested to these rooms, and the experiments will be made as requested, at your expense.*

Hudor, of Mass.—*We cannot undertake to publish thirty columns of personal dispute. If you wish to understand the subject, write to either of the gentlemen, and they will doubtless send you the papers. It was perhaps Mr. Aubin whom you mean as claiming a priority in water-gas discovery. We are in possession of his claims; they are on record in the Patent Office Reports. Those of European discovery you will find in Clegg.*

R. B., of Mass.—*Mr. Merrick of Philadelphia is the gentleman to whom you refer. You will find the facts you want on page 38 of the* AMERICAN GAS-LIGHT JOURNAL *for September, 1859.*

Anglico, of N. Y.—*You are slightly in error. "Wait a week," and you will see whether the information you require will not be forthcoming. You go off at half cock.*

B. M., of Wis.—*The next number of the* JOURNAL *will contain the Tables of Gas-Light Companies, in which you will find those about which you inquire. The last number contains the Report of the Rio de Janeiro Company, of which we have since received the Manuscript copy from the Company. The duty on apparatus for gas-works entered for consumption into Cuba and South America, ranges from twenty to thirty per cent.*

LAW REPORTS.

METROPOLITAN GAS-LIGHT COMPANY.

Before Judges SUTHERLAND, MULLIN and BONNEY.

Power of the Governor to Sign Bills after the Adjournment of the Legislature.

The People agt. *James Bowen, et al.*—This was the suit brought by the Attorney-General, restraining the Metropolitan Gas-Light Company from going into existence, on the ground that the act creating the company had been signed by the Governor after the adjournment of the Legislature, and was therefore invalid. At the Special Term the defendants demurred to the complaint, and their demurrer was sustained. The plaintiffs appealed to the General Term who decided, "That the judgment of the Special Term for the defendants on demurrer must be reversed with costs." Justice Sutherland dissenting. The Court decided that the Governor had no power to sign bills after the adjournment of the Legislature.

SUPREME COURT—GENERAL TERM.

Before Justices SUTHERLAND, BONNEY and MULLEN.

The St. Nicholas Hotel water-rate injunction—John P. Treadwell, &c. vs. *Myndert Van Schaick, &c.*

This was a suit for an injunction among other matters to restrain the Croton Board from collecting certain large water-rates laid against the St. Nicholas hotel in this city, and to prevent the Board from shutting off the water. The injunction was allowed upon an undertaking in $10,000 conditioned "to pay all costs and damages which might be awarded against the plaintiffs."

The General Term ordered the injunction to be vacated unless within ten days from the service of a copy of this order the plaintiffs shall deliver to the corporation counsel a bond or undertaking, to be approved of by a justice of this court as to amount and form, providing for security to the defendants for the payment of such amounts of water rent and *other damages* as they may be entitled to recover, if the judgment appealed from is affirmed by the Court of Appeals. The opinion of the court, per Mullen J., discusses the obvious defects in the undertaking, and indicates the authority of the General Term to vary the condition upon which the defendants were restrained.

OIL FACTORY BURNT.—Philadelphia, June 5—Graham's oil factory on Filbert and Twenty-first streets, was destroyed by fire this morning. Ten adjoining houses were damaged. Loss heavy.

The establishment included a meat packing, lard oil factory, lard refinery, stable, cooper shop, salting and smoking houses, &c. The loss will probably not fall short of $40,000, but it is covered by insurance.

GAS EXPLOSION.—An explosion recently occurred at the Point Breeze Gas Works, Philadelphia. It seems that a man descended into a well containing gas. Contrary to the rules of the works, he took a light with him. This caused the explosion. Several men were burnt, but none of them seriously.

NEW COAL-OIL ESTABLISHMENT.—Messrs. Theodore and Henry Clough, the former for many years the Superintendent, and the latter the assistant Superintendent of the late N. Y. Kerosene Oil Company, have recently commenced operations at Hunter's Point, L. I. Their thorough knowledge of the business and great experience are sure guarantees of the superiority of the oils they will manufacture. They have our best wishes.

PATENTS.

Inventors are informed that Patents are procured at the Rooms of the AMERICAN GAS-LIGHT JOURNAL, through F. C. TREADWELL, Jr., Esq., an experienced Patent Agent and Expert.

UNITED STATES.

28,446.—W. H. Adams, of Brooklyn, N. Y., for an Improvement in Apparatuses for Distilling Coal-Oils:

I claim, first, The use in the distillation of coal, shale and other analogous substances, to obtain the oil and other liquid products therefrom, of a retort consisting of a pit dug or otherwise made in the earth, substantially as described.

Second, The construction of a retort for distilling oil and other liquid products from coal, shale or other analogous substances, in a horizontal or slightly inclined form, with a draft through it in a horizontal direction or parallel with the floor, and without a separate furnace, so that the charge may burn away gradually toward the outlet, substantially as described.

Third, The steam pipe, j, in combination with the eduction pipe, b, substantially as and for the purpose specified.

Fourth, Connecting the eduction pipe, by which the condensed liquid products leave the retort with the main discharge pipe by which the vapors leave the retort substantially as described.

[This invention consists in a certain construction of a retort and in certain improvements in the apparatus for collecting and condensing the products of distillation, whereby the distillation of oil or other liquid products from coal, shale, or other analogous substances, may be performed on a very large scale, in a more convenient and economical manner than has hitherto been practiced.]

24,448.—Luther Atwood, of New York City, for an Improvement in the Manufacture of Oils obtained from Coals:

I claim the production of thin oils suitable to be manufactured into illuminating oils, from the heavier parts of the crude and fixed oils and other substances within mentioned, by treating them in the manner substantially as described, during one or several continuous distillations.

28,450.—J. D. Brown, of Cincinnati, Ohio, for an Improvement in Lanterns:

I claim the recessed floor, B C, formed with minute perforations over the entire surface of its upper portion B, and the vertical sides, c, of the recess, in the described combination with the imperforate floor, A, apertures, E, and lamp, D—the whole being constructed and arranged in the manner and for the purposes set forth.

28,454.—H. A. Clum, of Auburn, N. Y., for an Improvement in Barometers:

I claim, first, The moveable slides, D and E, with meteorological reading only, separate and detached from any graduations for vernier purposes, for summer and winter purposes, substantially as shown and described.

Second, The application of hights above sea level, of atmospheric pressure, &c., to the ordinary barometer face, as shewn in Fig. 1, columns 1 and 2 on the bed-pieces, A and B.

Third, The cistern, as shown in Fig. 6, consisting of two or more chambers connected by stop cocks at points above the open end of the tube.

Fourth, The entire cistern adjustment, as shown at H, Fig. 1, and N M R R S, Fig. 2, consisting of the connection of the vernier, I, to the cistern, which allows it to move with the cistern and tube, and also the movable cistern as fully represented in the drawing.

Fifth, The combination of two meteorological slides, D and E, for winter and summer purposes, to the ordinary parlor barometer, the cistern adjustment as described, with the cistern and further bottom adjustment as shown on face, H, Fig. 1; all as fully and substantially set forth.

28,464.—Charles Fricke, of Mobile, Ala, for an Improved Cement:

I claim the described water-proof composition or mortar cement, for laying brick, stone, &c., compounded substantially as described.

28,467.—Albertus Geiger, of Dayton, Ohio, for an Improvement in Vapor Lamps:

I claim the combined arrangement of the vaporizing tube, B, at constructed, and the conducting or wick tube, C, together constituting an efficient hydro-carbon gas generator, with the globe holder, D, by which the globe-holder is rigidly secured for use as described.

28,479.—S. I. Hayes, of Chicago, Ill., for an Improvement in Making Tube Joints:

I claim the ferrule of copper or other soft metal applied to the exterior of the iron tube, between it and the tube sheet, substantially as and for the purpose specified.

28,493.—L. W. Leeds and Calvert Vaux, of New York City, for an Improved Steam-Heating Apparatus:

We claim the admission of steam at or near and over all parts of, or a great portion of the bottom of a steam-heater, in numerous thin jets or streams; or, in other words, in a divided state, by a perforated pipe, or its equivalent, substantially as described, whereby an equable diffusion in any quantity, may be effected through the whole of the heater, for the purpose specified.

28,503.—T. S. Ray and A. C. Rand, of Buffalo, N. Y., for an Improvement in Vapor Lamps:

We claim the generating cup, F, in combination with the vaporizing tube, D, and supply or aperture, d3, the same being constructed arranged and operating substantially as set forth.

28,504.—G. W. Richardson, of New York City, for an Improved Steam-Heating Apparatus for Warming Buildings.

28,519.—J. R. Thomas, of Williamsburg, N. Y., for an Improvement in the Mode of Securing Lids on Gas Retorts:

I claim providing one end of the bar, D, with a double taper socket, d, and pivoting said end upon pintle, c, that said bar may be swung horizontally and also vertically upon the pintle, as and for the purpose shown and described.

[This invention consists in having a bar or hold-fast provided at one end with a socket, which is fitted on a pintle attached to the front of the retort at one side, the opposite end of the bar being fitted in a lock attached to the opposite end side of the retort, the bar or hold-fast having an eccentric connected to it at its center, and all so arranged as to form a simple and efficient fastening, and one that may be very readily manipulated for the purpose of securing the lid to the retort and detaching it therefrom without the possibility of one fastening interfering with the others in the same "bank" or furnace, each being allowed to be manipulated without being obstructed by the others.]

28,526.—Maximilian Wappich, of Sacramento, Cal., for an Improved Water Elevator:

I claim first, Sustaining and buoying the screw elevator by a water chamber exterior to the shell of the screw, either in connection with the air-chamber or without it, substantially as described.

Second, Regulating the admission of the water by the lip, j', constructed and operated as described.

28,533.—L. S. Chichester (Assignor to F. S. Cabot,) of New York City, for an Improvement in Filters:

I claim the combination, in the manner shown and described, of the plates, i h, and the filtering materials, with the adjustable plates, a d, when all the said parts are constructed substantially as set forth, so that by adjusting either of the plates, a d, filtered or unfiltered water may be obtained at pleasure, as specified.

[The object of this invention is to obtain a portable, simple and efficient filter, by which either filtered or unfiltered water may be drawn as required, by a very simple adjustment. For instance, when filtered water is required, for drinking or other purposes, water is made to pass through the filtering medium, and when unfiltered water is required, for washing or other purposes, the water is allowed to pass unobstructed and quickly through the filter case, thereby obviating, when not necessary, the comparatively-slow flow of the water caused by the obstruction of the filtering medium.]

28,536.—S. W. Lowe (Assignor to himself, C. Wirgman and D. S. Johnson), of Philadelphia, Pa., for an Improvement in Vapor Lamps:

I claim the woven wire bag or case, B, the fibrous packing, D, and the wick, C, when the same are arranged and combined together in a lamp, substantially as, and for the purpose set forth and described.

28,539.—Thomas Shaw (Assignor to himself and L. N. Brognard,) of Philadelphia, Pa., for an Improvement in Furnaces for Burning Coal Oil or other Hydro-Carbon Fluids under Steam Generators:

I claim the conveying of ignitable fluids to the interior of the fire chamber by means of a pipe surrounded by water within the boiler, substantially as and for the purpose set forth.

I claim saturating the air with vapors of a fluid, by means of the perforated tube, H, and its box, h, when arranged in respect to the fire-chamber of the steam boiler, substantially as set.

I claim the bars, n, and n, arranged in respect to the grate bars and fire chamber, substantially as and for the purpose set forth.

28,543.—George Nock, of Pittsburgh, Pa., assignor to T. G. Nock, of Windsor Locks, Conn., for an Improvement in Desulpburizing Coke.

I claim the use of a mixture of an oxydizing agent, such as peroxide of manganese, nitrate of potash, or other substance which yields oxygen, at an elevated temperature in contact with carbon, with an aqueous solution of chloride of sodium, or other alkaline chloride, or chloride of an alkaline earth, in the process of desulphurizing coke, in the manner described.

Also The use of a mixture of peroxide of manganese or other substance which yields oxygen at an elevated temperature in contact with carbon and colophony, (or rosin,) or other easily combustible substance, with an aqueous solution of chloride of sodium, (common salt,) or other alkaline chloride, or salt of an alkaline earth, for the purpose of desulphurizing coke in the manner described.

28,548.—T. G. Arnold, of New York City, for an Improvement in Drop-Light Joints:

I claim, first, The construction of the socket of a drop light joint of a single piece, substantially as described.

Second The employment, in combination with the socket, A, of a drop light joint for gas burners, made in one piece, and the elastic lining, d, of a screw ring, e, fitted to a screw thread inside of the said socket substantially as and for the purpose specified.

[This invention consists in a certain construction of the socket of the joint and in a certain mode of applying the lining of cork or other elastic material, whereby provision is made for the contraction or renewal of the said lining when its opening becomes worn by friction or enlarged by the heat of the burner to which it is applied, or for adapting it to variations in the sizes of burners.]

28,549.—E. H. Ashcroft, of Boston, Mass., for an Improvement in Apparatuses for Napthalizing Gases:

I claim the combination of the gas receiving and expanding chamber, F, with the napthalizing cistern, scroll and float, as specified

Also, the above described arrangement and application of the float, scroll and disk, whereby they are rendered capable of easy and proper adjustment, as explained.

Also, the combination of one or more propelling wings or the equivalent thereof, with the scroll and float, when applied and used within a cistern, substantially in manner and for the purposes as described—such propelling devices being to facilitate or effect the rotation of the said float and scroll while being buoyed within the liquids, as described.

Also, the application and arrangement of the foraminous, diaphragm with respect to the cistern and eduction pipe of the apparatus as described.

28,556.—G. C. Brower, of New Orleans, La., for an Improvement in Gas Torches:

I claim a gas torch, constructed substantially as described and represented.

28,578.—James Hollingsworth, of Chicago, Ill., for an Improved Apparatus for Heating Air by Steam:

I claim the arrangement of the furnace, J, boiler, B, steam boxes and pipes, C D, and air box, A, as and for the purpose shown and described.

I also claim the arrangement of the deflectors, H I J, between the steam boxes and the boiler, as and for the purpose shown and described.

[This invention consists in the arrangement of the steam chest or principal heater within the same air-warming chamber or casing with the boiler, but so far detached from and elevated above the body of the boiler that the air to be warmed may pass under it and between it and the body of the boiler, by which means a much larger steam-heated surface is presented to the air in the warming chamber than when the steam chamber or heater is within or directly upon the boiler. It further consists in a certain arrangement within the air warming chamber, and in relation to the body of the boiler and steam chest or heater, of deflectors, for the purpose of directing the cold air which enters the chamber under the bottom of the steam chest or heater, and at the same time over and in contact with the body of the boiler and any portion of the smoke flues that may be exposed.]

28,596.—Robert Nicoll, of New York City, for an Improvement in Stop-cocks:

I claim the employment or use of two valves, D E, placed at opposite sides of the seat, c, and made to move simultaneously towards and from the seat by means of the right and left screws, or their equivalents, for the purpose specified.

[The object of this invention is to obtain a cock which will have its passage obstructed in a much less degree than usual by the valve-seat. The seats of ordinary cocks, as is well known, require to be of a certain degree of thickness in order to sustain the pressure of the valve, and this thickness acts as a great obstruction to the passage of the water or steam through the cock.]

28,599.—George Palmer of Littlestown, Pa., for an Improvement in Pumps:

I claim the employment, for united operation, of the spherical chamber, E diaphragm, d, gum elastic springs, G G, jointed connecting rod, F, and weighted lever, H, when the same are constructed and arranged to operate in combination with an arrangement such as described, for raising and forcing water, as set forth.

[The purpose of this invention is to facilitate the operation of the pump, render the same uniform or regular in its action and capable of being operated with a moderate application of power. The invention consists in the use of an elastic or flexible diaphragm, placed within a suitable case or chamber provided with spring stops; the elastic diaphragm being connected with a loaded lever, and the whole so arranged as to effect the desired result.]

28,604.—A. H. Rauch, of Bethlehem, Pa., for Improved Devices for Drawing Water from, and Supplying Air to, the Air Vessels of Pumps, &c.:

I claim the drainer, C, applied in combination with the air vessel, A, furnished with a system of cocks substantially as described, whereby the water in the air vessel may be exchanged for air, as set forth.

[This invention consists in a novel and simple device whereby the air vessel of a pump may, while the pump is in operation, have a portion of its water exchanged for an equal volume of air at atmospheric pressure as often as water has, by absorption or compression of the air, arrived at too high a level in the air vessel. The same device is also applicable, in the same manner, for a similar purpose to hydraulic rams, or any other hydraulic apparatus in which an air vessel may be used.]

28,616.—James Stratton, of Brooklyn, N. Y., for an Improvement in Devices for Regulating the Pressure of Water in Pipes:

I claim the employment or use of the pipe, A', communicating with the diaphragm chamber, with or without the air chamber, in connection with the supply pipe, A, valve, C, and pipes, D F G, with necessary cock or cocks, arranged to operate substantially as and for the purpose set forth.

I further claim, in connection with the above named parts, the perforated cap or chamber, J, encompassing the valve, C, substantially as and for the purpose set forth.

[This invention relates to an improvement on a device for regulating the pressure of water in pipes, for which Letters Patent were granted to the inventor, bearing date the 22d day of November, 1859.]

28,617.—James Taylor, of Dartmouth, Mass., for an Improvement in Liquids for Fluid Gas Meters:

I claim the use of the bittern or mother-water left after extracting the crystalizable salts from sea-water, for filling wet gas meters; all in the manner and for the purpose substantially as set forth.

28,622.—Alonzo Warren and E. Damon, Jr., of Boston, Mass., for an Improvement in Hanging Turbine Wheels:

We claim the globe coupling, A, in combination with the adjustable screw step, B, the same being used for a vertical turbine shaft, in the manner set forth.

[This invention consists in a novel combination of hollow spindle shaft, with globular enlargement, adjustable step and stationary shaft, whereby a very short hollow shaft may be used, adding on the top the necessary length of solid shaft. In consequence of thus using a short shaft, there will be less trembling when the parts are in operation, and the parts may be kept well lubricated and in good working order, for a great while.]

28,626.—Lum Woodruff, of Ann Harbor, Mich., for an Improvement in Barometers:

I claim the screw plug, constructed and applied to the reservoir and cistern, substantially as described and operating as set forth.

28,644.—N. S. Bean, of Manchester, N. H., for an Improvement in Pumps:

I claim the concentric arrangement and combination of the pump cylinder, suction and discharge passage, caps, and valve plates, with valves located in opposite sides thereof, all operating substantially as described.

28,647.—John Butler, of Brooklyn, N. Y., for an Improvement in Flexible Gas Tubes:

I claim, as an improved article of manufacture, a flexible gas conductor, composed of a flexible leaden tube, covered with braid or other suitable pliable non-metallic covering, substantially as shown and described.

[This invention consists in the employment of a tube or lead pipe possessing the desired flexibility or pliability, and which at the same time will keep perfectly air tight; and in covering this pipe with any suitable material, either braiding or the ordinary india-rubber tubing, which shall be of a suitable thickness to prevent any liability of the lead pipe collapsing, either by weights which may be put upon it, or by coiling it up, or bending it in short curves for establishing the stand upon the table, or from becoming injured in any way from usage.]

28,652.—Joseph Clarke, of Syracuse, N. Y., for an Improvement in Vapor Lamps:

I claim the construction of the conducting tubes, H and G, in one solid piece of metal, E, substantially in the manner and for the purpose stated.

RE-ISSUES.

The New York Rubber Company, of New York City assignees of C. H. Hinckley, of Stonington, Conn., for an Improved Coating for Hose Pipe. Patented Sept. 29, 1857:

I claim constructing hose of flexible tubing of textile and fibrous material with an internal water-proof coating, by first applying said coating on the outside of the cloth or other pipe, and then inverting the coating pipe by drawing it over and through a metallic cylinder, or otherwise suitably inverting the same.

W. F. Shaw, of Boston, Mass., for an Improved Apparatus for Heating or Cooking by Gas. Patented, Nov. 4, 1856:

I claim the combination of an air and gas burner, and an air guide or concentrator, G, operating in the manner substantially as set forth for th purpose specified.

I claim the flue space, X, around the chamber, H2, with its openings, Y and Z, operating as an air-heater when the oven is in place, and as a passage for the escape of the gases when other utensils are employed, as set forth.

HORATIO EAGLE,

No. 254 CANAL STREET,

Rooms of the AMERICAN GAS-LIGHT JOURNAL, *near Broadway,*

NEW YORK.

MANUFACTURERS' AGENT FOR THE SALE OF DESCRIPTIONS OF

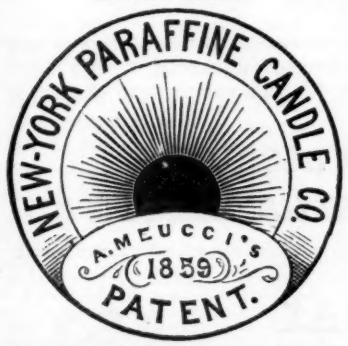
All Descriptions of Apparatus and Philosophical Instruments used in and about Gas and Coal-Oil Works.

ALSO,

Portable Gas-Works of all Descriptions. Also, Water-Pipes, Water-Meters, Force-Pumps,

AND ALL OTHER WATER APPARATUS, AND FIRE-CLAY SEWERAGE PIPES.

CANDLES FROM COAL.—A New Invention, Manufactured by the NEW YORK PARAFFINE CANDLE COMPANY, UNDER MEUCCI'S PATENT.



These Candles being made from one of the products of the distillation of Coal, and having the same chemical constituents as gas, being, in fact,

GAS SOLIDIFIED,

are eminently adapted for giving light. They took the highest premium at the late Fair of the American Institute, held October, 1859, as may be seen from the following extract from the report of the Committee :—

"Our tests with the Photometer showed that the Paraffine Candles above referred to, as compared with the best Sperm, had greater illuminating power, gave a softer and pleasanter light to read by, and burned full ten per cent. longer than the standard Sperm Candle, and we recommend it as deserving the highest premium of the Institute.

"ISAIAH DECK, M. D.,
"Analytical and Consulting Chemist
"JOSEPH YATES,
"Civil Engineer."

The Candles manufactured by this Company are warranted to stand all climates, will not run or gutter, and require no snuffing, and, unlike some other so-called Paraffine Candles,

DO NOT SMOKE IN BURNING OR BECOME YELLOW WITH AGE, AND ARE WITHOUT ODOR.

CAUTION.—As an Imitation Candle is already offered in the market, purchasers should bear in mind that every box of Candles sold by this Company is stamped with its adopted trade mark, which is a circle, enclosing the words, "NEW YORK PARAFFINE CANDLE CO., MEUCCI'S PATENT, 1859," with our trade mark as above, to imitate which is felony by law.

WM. E. RIDER, 16 Beekman-st., N. Y.,
Agent for the Company.

STANDARD Photometric Candles.—Owing to a number of Applications made to me for information concerning the supply of the "Standard Sperm Candles," used in Photometrics, I have obtained a supply, from which I can furnish those who require them with full directions for use. T. W. PARMELE,
No. 4 Irving Place, New York.

D. C. GREEN'S PARAFFINE 42½ Gall. Lubricating Oil.—228 Pearl street, New York. Benzole, Crude Coal Oils, Naptha, Burning Coal Oils, Paraffine, Paraffine Candles.

COAL OIL.—10,000 Gallons Celebrated Kerosene Coal Oil, 5,000 Gallons Boston Coal Oil, and other brands, at $1.25 per gallon. STANFORD BROTHERS,
Pacific Oil and Camphene Works, cor. of Front and California streets, San Francisco, Cal.

EMPIRE STATE COAL OIL CO.—Manufacturers of Refined, Bleached, and Deodorized Coal Oil, Factory on Smith street, Brooklyn, L. I.; Store, 240 Pearl street, corner Burling Slip, New York.

HENDRICKSON & SHATTUCK, Manufacturers of the Excelsior Lubricating Oil, Philogene and Paraffine Oils; also, Dealers in Sperm, Lard, Whale, Elephant, Tanners', Tallow, Coal, Neatsfoots, Paint and other Oils, Office, No. 22 Cedar street, between William and Pearl streets. D. W. HENDRICKSON,
ALBERT G. SHATTUCK,
New York.

DEPOT AND WAREROOM of the New-York Columbian Oil Company, 68 Courtland street, New York.
G. M. WHEATON, Agent.

J. L. McREA, Dealer in Coal Oils and Lamps, Binnacle and Signal Light Oils, 139 Water street, New York.

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ORION COAL OIL WORKS—Office, 116 Maiden Lane, New York.—Illuminating, Crude and Lubricating Oils, Paraffine, Naptha and Paraffine Candles; constantly on hand an assortment of Coal Oil Lamps.

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Works on Red Hook, Brooklyn, manufacturer of Illuminating, Lubricating, Binnacle and Head Light Coal Oils. Also, Agent for the Aladdin Coal Oil Works, Pittsburg.

CARBON OIL CO.—191 Pearl St, near Maiden Lane, N. Y.—Carbon Oil is the product of pure Petroleum, (from the Oil Wells of Pennsylvania,) which makes an illuminating Oil of greater purity than any other Mineral Substance known. Is not explosive, and is for sale, with a general assortment of Lamps, Burners, Chimneys, &c.

DIRECTIONS.—Trim the wick even with the tube, (clipping off the corners slightly). After lighting and putting on the chimney, allow the flame to burn low for a minute, to prevent breaking the chimney. While burning, the wick must always be kept below the top of the cone.

CRUDE COAL OIL For Refiners.—The North American and Lucesco Coal Oil Companies, of Pennsylvania.

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WM. C. UHLHORN, 9 South William-st.,
Agents, New York.

TO COAL OIL REFINERS.—Having made arrangements with the Proprietor of the principal wells yielding Petroleum, or Seneca Oil, in the State of Pennsylvania, we are constantly receiving supplies, and are prepared to offer this article on the most favorable terms, and in quantities to suit purchasers.

SCHIEFFELIN BROTHERS & CO.,
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P. CONWAY, Manufacturer of Oil Cans, square and round, of every size, Druggists' and Shipping Cans made tight, and delivered to any part of the city, by sending to No. 138 MAIDEN LANE, N. Y.

COPE'S PATENTED COAL OIL Pump.—Reliable and effective. Manufactured by S. CUMMINGS & SON,
No. 162 Front-st., Cincinnati, O.

Rosin Oil and Rosin.—For sale of our own manufacture a superior article of ROSIN OIL, for Gas purposes. Also Refined Oil. For shipment in secure iron-bound barrels, or by any single barrel.

Address MARYLAND GAS COMPANY, No. 6 Bank of Baltimore Building, Baltimore, Md.

P. S. This Company is also prepared to construct their superior Patented GAS WORKS of any capacity, from that required for a private dwelling, hotel, church, college or factory, to such as will supply cities and towns, complete in all their parts for the manufacture of GAS, from either Rosin Oil, Coal, or Rosin.

WHEELER & HOYT.—Distillers of Camphene Alcohol, and Manufacturers of the best quality of burning Fluid; also, Dealers in Oils and Naval Stores of every description. Office, 106 Pearl street, near Maiden Lane, New York.

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H. S. HOYT.

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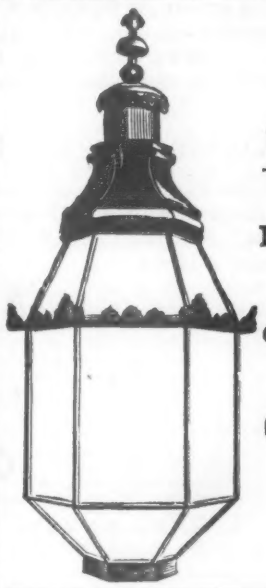
AARON SEELEY, Manufacturer of Burning Fluid, Camphene, and Alcohol, No. 32 Burling Slip, New York.

STREET GAS-LANTERNS.

Cities and Gas Companies furnished at reasonable rates with Lanterns, Iron Frames, Grazed Complete or Separate. Also, Fancy Lanterns, for Hotels, Restaurants, Theatres, Telegraph Offices, Churches, and other Public Buildings. Having been in the business for many years I fully understand the manufacture of Gas Lanterns, and with the aid of machinery can make the parts cheaper than any other manufacturer. Orders from a distance solicited, and executed promply.

A. C. PARRY,
31 Race Street, Cincinnati, Ohio.



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LAMPS!!

OF EVERY PATTERN, FOR

Hotels, Saloons, & Public Buildings,

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ENAMEL DIALS FOR GAS AND WATER METERS
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The best, therefore the cheapest for Gas and Water Meters and Engineers' Indicators.

These Dials are particularly adapted to all purposes where gas, gas-vapors, or acids, are present. Also, Watch and Clock Dials of every description, from any size up to 14 inches diameter.

The undersigned embrace this opportunity of returning their thanks to the gas-meter manufacturers throughout the United States, for the very liberal patronage they have received for the past ten years, during which they have been established in Philadelphia, which has placed us ahead of all competition. Our sales for the past year have been far greater than we could have anticipated, with the prospects of a steady increase. Our constant aim has been, and will be, to adopt all improved processes of manufacture, combining improvement in quality with reduction in price All Dials made by us are warranted to be as represented, and of the best materials and workmanship, which will recommend them to all parties wishing the very best. Circulars sent free by mail, or on application

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GAS-LIGHT BURNER.

Complete in itself, without other machinery. Applied with founts to gas-fixtures in every variety; also, to hand-lamps such as use oil, burning fluid, coal oils, &c., making its own gas in the burner, *with entire safety from burning fluid.* Devoid of smell, smoke, or flicker; combining simplicity, economy and brilliancy of light in any temperature; adapted to and used by churches, factories, dwellings, hotels, steamers, railroad cars omnibuses, private carriages, street lamps, &c., &c.—all at an expense of less than one cent per hour each burner. Call and see this light for the million, or send for circular,

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State and county rights for sale. Parties wanting gas in large or small quantities, should apply as above before making other engagements.

SCHWARZ'S PATENT STEATITE, or Lava Gas-Burner Tips.—These obtained a Gold Prize Medal in Europe, where they are now extensively used in place of metal tips. In Prof. Liebig's and other Chemists' works, these burners are recommended as *indestructible by acids or alkalies, unchangeable by heat or cold, not liable to rust or corrosion,* and superior in economy to the metal tips. Boston and other cities have adopted them for street lights after a satisfactory trial. They are imported from Germany by the undersigned, sole Agent for America, who can now supply the trade or cities at reduced prices, with any pattern of tips to fit the double cylinder or other kind of burners. For sale also, Large Gas Heating Burners, of same material, for Chemists, &c. W. W. WARREN, 25 Kilby-st., Boston.

SEYTON & WAINWRIGHT, 37 William street, New York city, Sotck and Exchange Brokers, General Railroad and European Agents. Stocks and Bonds bought and sold at the Board of Brokers, and at private sale. Railroad and other loans negotiated, and collections made for home or European account. *Exchange on London.*

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REFERENCES:

Duncan Sherman & Co., Richard Irvin & Co., John B. Murray, and Union Bank, New York; Webster Bank and Peter Wainwright, Esq., Boston; E. F. Satterthwaite, London; Alfred F. James, Galveston, Tex.; Ogden, Fleetwood & Co., Chicago; Erastus Corning, Esq., Albany; W. Fisher & Son, Baltimore; J. P. Kilbreth, Cincinnati; G. Parish Ogden, Troy.

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COAL AND ROSIN WORKS of any capacity constructed on the most approved plans.

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JAMES RENWICK SMEDBERG, Consulting and Constructing GAS-ENGINEER. SAVANNAH, Geo.

REFERENCES:

CHARLES ROOME, Esq., Pres. Man. Gas Co., N. Y.
J. K. BRICK, Esq., Eng'r Brooklyn Gas Co., "
Messrs. ELLIMAN BROTHERS, New-York.
F. T. WILLIS, Esq., Pres. Savannah Gas Co.
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AARON CLAFLIN, Esq., "
A. B WOOD, Esq., "
GEORGE BLISS, Esq., N. Y., Pres. M. S. & N. I. R. R. Co.
GEO. M. ATWATER, Esq., Springfield, Mass.
JAS. D. BREWER, Esq., Pres. Springfield Gas Co.,
JOHN I. BAKER, Esq., Pres Beverly Gas Co.,
HENRY E. RUSSELL, Esq., Pres. N. Britain Gas Co.,
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The Cities of New York, Brooklyn, Williamsburgh, and Philadelphia, are already supplied with these Boxes, and the Cities of New Orleans, Mobile, Cincinnati, Louisville, St. Louis and others will soon follow. The admirable working of this system will cause it to be adopted by the Postmaster-General, throughout the Union. The revenue of the City Mail Delivery of New York has already materially increased since the adoption of the Lamp-Post Letter-Boxes.

2.—Improved Mode of Setting Gas-Meters in the Walls of Buildings.

This Improvement consists of a neat cast-iron box-frame, highly ornamented, set in the Front Walls of Buildings, secured by a Patent Lock and ey, to contain the gas-meter, so that the Inspector can open it from the outside and take the record of the Index.

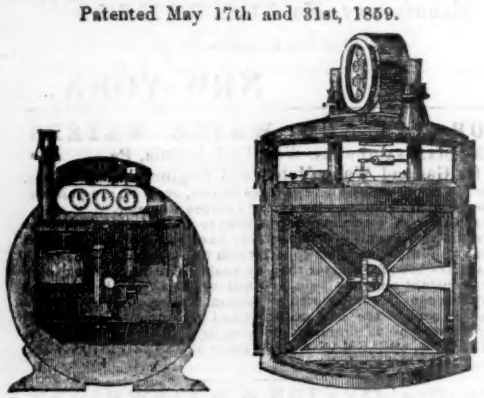
The advantages are two-fold. It prevents access to dwellings by Burglars, under pretence of being gas-inspectors ; and, it avoids the trouble and confusion to families and to inspectors, of passing through rooms and cellars, many of which are dark and full of goods and coals or provisions.

3.—New Patent for Revolving Lights for Signalizing Ships at Sea.

By this system, the Lights being attached to the wheel-houses of Steamships, they revolve with the wheels, and an endless variety of signals may be used. The starboard lights being green, and the larboard red, and either or both so arranged as to be instantly reversed, advanced, thrown out of gear or stopped. They can, by the combination of "Rodgers' Code of Signals"—now before Congress for adoption—form a complete vocabulary of language. For either or all of these Improvements, Address

ALBERT POTTS, Patentee,
PHILADELPHIA.

HARRIS & BROTHER'S
Improved Dry Gas-Meter,
Patented May 17th and 31st, 1859.



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FURMAN St., Near Fulton Ferry, Brooklyn, N. Y. Samples are on Exhibition at the Rooms of THE AMERICAN GAS-LIGHT JOURNAL.

CANNEL and COAL
OF THE BEST DESCRIPTIONS
FOR MAKING GAS AND COKE.

ANALYSES OF CANNEL,
Showing, from the most recent tests, the productive power (in volume) of each kind of material.

	GAS. Per ton, 2240 lbs. In Cubic Feet. At 60° temperature.	COKE. Per ton, 2240 lbs. Cwt.	Qrs.	Lbs.	Quality of Coke.	Ammonia Water in Gallons.	Tar in Gallons.	Illuminating power * per burner consuming 5 feet Gas per hour.	Price per ton free on board vessels in Liverpool	Price at $4.80 per £ sterling.
1	11 700	13	2	7	ood.	16	19	22.50	17s.	$4.08
2	11.000	13	1	16	"	18	16¼	21.25	15s. 6d	3.72
3	10,000	11	2	0	Inferior.	25	15¼	20.00	14s.	3 36

ANALYSES OF COAL.

No.	GAS Per ton, 2240 lbs. In Cubic Feet.	COKE. Per ton, 2240 lbs. Cwt.	Qrs.	Lbs.	Quality of Coke.	Ammonia Water in Gallons.	Tar in Gallons.	Illuminating power * per burner consuming 5 feet Gas per hour.	Price per ton free on board vessels in Liverpool.	Price at $4.80 per £ sterling.
1	11,000	13	1	16	Good.	16	11¼	14.00	11s. 6d.	$2.76
2	9,690	13	3	0	"	27	10	10.40	9s. 6d.	2.28
3	9,800	13	2	0	"	24	12	9.80	8s. 6d.	2.04

* Equal to Spermacetti Candles, burning 120 grs. per hour.

The above analyses embrace the best Cannel and Coal raised in the Lancashire, &c., districts, and are tabulated, for safety, rather below the average results. They are large, well screened, and free from dirt when delivered on board vessels, and are used for gas purposes at the chief gas works in England and on the Continent.

Orders for less than 50 tons, (*i. e.*, a boat load,) will be charged the cost of carting, viz., 1s. 6d. per ton.

The prices quoted will in all cases be subject to such alterations, more or less, as the case may be, as may arise in the market between the issue of this offer and the time at which the order may come to hand.

TERMS:—Cash, on presentation of the bills of lading at your bankers or agents in Liverpool, or as may be otherwise arranged, less 2½ per cent. discount

Also, HAND PICKED CANNEL and COAL, for house use.

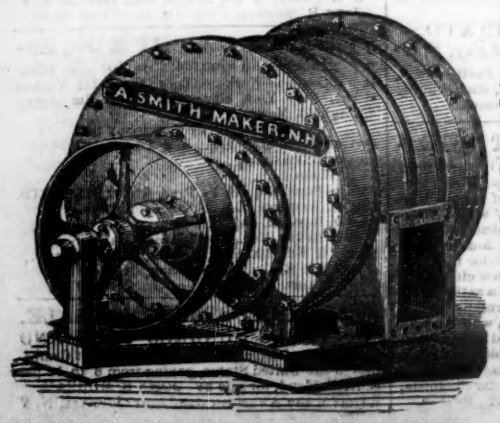
Concessions in prices made for large quantities.

GAS APPARATUS of all descriptions and on the most approved principles. Also, Purifying and other materials supplied.

ANALYSES, PLANS, and ESTIMATES, and other information required, and the highest references, furnished on application.

Contracts for materials and works entered into. No charge made for superintending shipments, preparing bills of lading, or passing entries.

EMANUEL TURNER & CO.,
Export Offices, 34 Castle street, Liverpool, England.



THE ANNEXED CUT REPRESENTS MACKENZIE'S PATENT GAS EXHAUSTER (Force Blast.)

It is offered to Gas Companies as a most perfect Machine. They are made of various sizes, capable of exhausting from 5,000 to 150,000 cubic feet per hour.

They require less power, work smoothly, are not so liable to get out of order, and cost much less than the imported ones.

Gas companies intending to use an exhauster, by stating the quantity of gas they may wish to have pass through per hour, will be furnished with a statement of the proper size, and the price of the same, on application to ADDISON SMITH, Manufacturer, New Haven, Conn., or to Messrs. ELLIMAN BROTHERS, New York.

The manufacturer has the liberty to refer to the Albany, N. Y., Gas Light Co., where one has been in constant operation for many months. Another one, capable of exhausting from 50,000 to 70,000 cubic feet per hour, will be in operation in a few weeks, at the St. Louis Mo., Gas-Works.

WILLIAM ROY,
98 Beaver Street.

NEW YORK, IMPORTER OF THE CELEBRATED PERCETON FIRE-CLAY RETORTS the quality of which is superior to any other clay yet discovered. Analysis as under :

Silica	62.5	Magnesia	0.8
Alumina	35 0	Prox. of Manganese	0.2
Prox. of Iron	0.9	Phos. of Iron	0.5
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VITRIFIED FIRE-CLAY PIPES, from 2-inch to 36-inch, diameter, in lengths of two or three feet ; are indestructible, and not affected by gases or acids.

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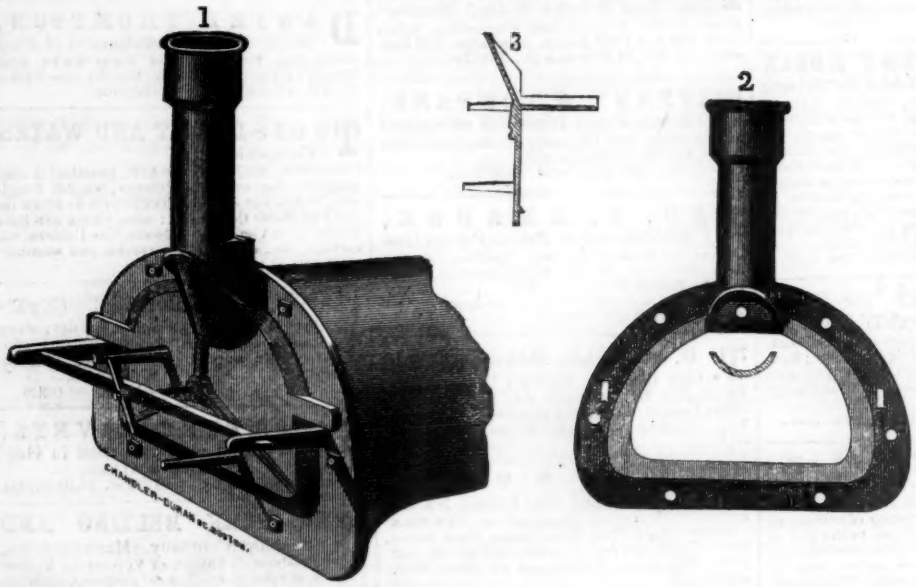

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